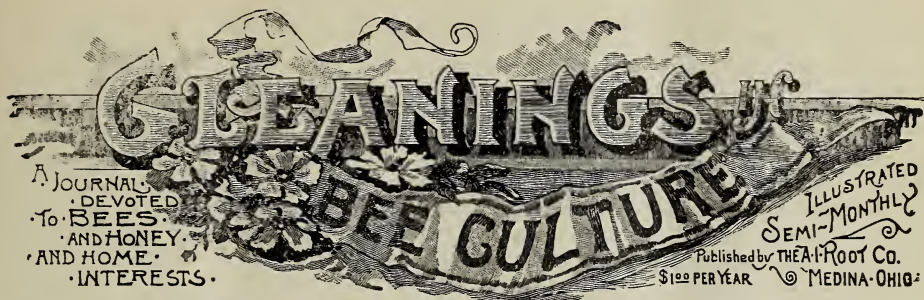


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Vol. XXIV.

JAN. 15, 1896.

No. 2.



THE ONTARIO B. K. A. gives a copy of *Canadian Bee Journal* free to each member. That's the way to do things.

THE EDITOR of *Canadian Bee Journal* thinks sweet clover may do damage by keeping the bees breeding too late.

DRY-WEATHER VINE has been mentioned by two or three as a great honey-plant. What other name has it? What's its botanical name?

MY BEES were cellared Nov. 13, and cellar-door left open. A week later, zero weather closed the cellar; then it was open Dec. 17—25, and no fire was needed till Jan. 4.

HUTCHINSON says, "Many bee-keepers are beginning to realize that, for them, bee-keeping is not what it was once." "*Beginning?*" Humph!

THERE WERE 380 colonies of living bees on exhibition at the great German convention at Goerlitz. I didn't see that many at the World's Fair at Chicago.

THE AMERICAN BEE JOURNAL opens up the new year with new head-pieces for all its departments, and a new head-piece for the whole business. Looks right neat.

THE *Progressive Bee keeper* for January comes to hand looking very down-hearted—blue as indigo. But it's only the cover; inside it's chipper as you please, and full of good things.

SECTIONS have been kept two years without granulating, by putting in a common tin biscuit-box and gumming a strip of paper round the lid to exclude the air.—J. T., in *British Bee Journal*.

SOME GOOD WORK is being done in the two *Bee Journals*, American and Canadian, by way of showing up men who are of the sort for bee-keepers not to send money to. [GLEANINGS is showing 'em up too.—ED.]

SPECIALTY means happiness. It is the non-specialists who say, "What's life worth living for, if you can't have a little fun now and then?" The specialists have their fun all the time.—F. L. Thompson, in *American Bee Journal*.

MME. MODJESKA, the once famous actress, according to an item in the *British Bee Journal*, is now a California farmer with 760 colonies of bees on her ranch at the foot of the Santiago Peak. What's Rambler about? or is he keeping it all to himself?

MRS. AXTELL IS RIGHT, p. 18, that too many bees won't do in a small cellar; and she's also right that too few in a large cellar won't do if the cellar is too cold; but if the temperature is right I think I'd risk a single colony in a cellar measuring a mile each way.

MRS. ATCHLEY thinks I ought to mention who originally wrote the articles heretofore mentioned as copied from *American Bee Journal* in *Southland Queen*. The series of lessons first appeared in the *American Bee Journal* for 1894, signed Jennie Atchley.

THE BIG-LITTLE-HIVE discussion is smothered in GLEANINGS, but I shouldn't be surprised to see it break out again any time. Chas. Dadant is now giving little hives some heavy blows in the *American Bee Journal*. [It had better not open up right away, or I fear I'll get my ears warmed.—ED.]

REFERRING TO MY STATEMENT that Dzierzon tolerates frames with end-bars, only since the advent of the extractor, T. Greiner writes: "Are you aware that Dzierzon does not tolerate the frame in the brood-chamber up to this day?" There, you see how it is. When I think I do happen to know something, some one knocks it all over.

A. I. Root seems kind o' crazy over zwieback. We don't have whole-wheat bread at our house, but we're very fond of zwieback made of common bread. I wonder why zwieback of whole-wheat bread can't be made wholesale by the bakers. I'd like to send for a barrel of it. The common kind used to be sold in Chicago. They made it of stale or left-over bread.

FOR FEEDING, H. R. Boardman says in *Review*, "Sugar and water in about equal parts thoroughly dissolved is all that is needed. Don't imagine that you can help the bees in their work of ripening the feed at any time by making it thicker. You'll only hinder." Shouldn't wonder if he's right. [I don't wonder, but feel pretty "sartin" he's right.—ED.]

"DRIVING" CUTS QUITE A FIGURE in the bee-talk and bee-shows of England. I doubt whether some of our younger bee-keepers know the meaning of the term. Queer that so many skeps remain in England. The editor of the *British Bee Journal* speaks of having taken part in "many hundreds of drivings." I don't believe he can be matched with another such editor on this side.

THAT NEW THEORY, that "uniformity of temperature is one of the prime causes of bees being put out in the spring in a weak and debilitated condition," conflicts somewhat with a statement of Doolittle in the *American Bee Journal*, that "evenness of temperature, and keeping it at about the desired point, is one of the great secrets of successful wintering in cellars." [But you don't say what *you* think about it.—ED.]

SKYLARK, p. 8, goes for me for copying S. S. Butler's plan of using old cans. Bless you, Skylark, I don't indorse what I clip, any more than GLEANINGS does in first publishing. Go for GLEANINGS! Say, Skylark, I've got something for you. "Taint straws or stovewood either. But come around when the weather is warmer. Stones are all frozen down now. [I am glad they are frozen down, for I expect to take the train for Marengo to-night.—ED.]

AN EGG, when first laid, stands on end attached to the base of the cell. In a few minutes a nurse-bee lays it on its side. "On the second day we find the bees have shifted its position to an angle of about 35 degrees; on the third it is moved again to a horizontal position, and on the fourth day it hatches out."—H. W. Brice, in *British Bee Journal*. That differs from the performance I've seen given heretofore by British authority. How is it with our American bees, Bro. R. L.?

A FRIEND calls my attention to the 7th editorial on page 953, and seems to think something is wrong with the word "apiarian." I'm not authority as a "linguarian," but I think "apiarist" would do fully as well. [Langstroth (and who used the king's English more fluently and exactly than he?) invariably used the term "apiarian." But the new Standard Dictionary says "apiarian" is improperly used for "apiarist." The same book uses "apiary" as an adjective, and says Dr. Miller has charge of the "apiary terms."—ED.]

EXPERIMENTS reported in *Review*, by R. L. Taylor, show that 145° of heat melts honey,

and that at 165° there is some change in the quality of the honey; above 165° rapid deterioration; the greater the heat, the more rapid the deterioration. Better hold 145° as the highest limit. [We have generally cautioned bee-keepers not to heat their candied honey over 180°, because some of the finest clover honey we ever had was that which had first been raised to a temperature of 180 degrees and no higher. If the honey is then sealed in glass it will remain liquid for a long time. Ours kept clear for two years. Mr. Taylor's experiment was with honey in the comb or unfinished sections from the season of 1894. This honey was raised to the various temperatures you mention, and samples at each temperature were taken for further comparison. Mr. T. says that raised to 145° and no higher was the best, and that the others were inferior, both in color and flavor. I am not surprised, because wax melts at 145; and when the temperature was raised to a higher point, some of its own flavor and color would be incorporated into the honey. I know this would be true, because extracted honey from chunk honey rendered in a solar wax-extractor is always darker and poorer in flavor than the same honey squeezed or extracted from the comb. I am sorry he did not take honey free from the comb. If this had been heated to the various temperatures I think 180° of heat would not have shown a deterioration. Boiling, I know, does affect its flavor. I sincerely hope he will try the experiment over again.—ED.]



COST OF STARTING IN BEE KEEPING IN CALIFORNIA.



If I differ with any of your correspondents, Mr. Editor, I give you fair notice that *they* must give up, for I can't. A skylark never surrenders. If he is overpowered and defeated, he blows himself up. I suppose it will come to this at last.

T. H. B., of Mercuse, Cal., asks Dr. Miller, in *American Bee Journal*, what it would cost him to start in bee-keeping with, say, 10 colonies, requesting him to itemize the articles. Dr. M. immediately sent him a bill of nearly a hundred dollars. The idea of his sending clear to Illinois, and Skylark right beside him—or nearly so! T. H. B., it is just good for you. I wish he had charged you two hundred dollars. Now, *you* might have known that Dr. M. "don't

know" any thing about prices in California. I will, in pity for you, revise the "doctor's bill."

1 good bee-paper	\$ 1 00
1 text book,	1 25
1 bee-veil,	50
1 Clark smoker,	60
10 colonies of bees, which you can buy	
in old rickety hives for 50 cts.,	5 00
10 movable-frame hives in flat,	10 00
30 supers in flat, and separators,	3 50
3000 sections,	10 50
30 lbs. surplus foundation,	15 00

Total, \$47 35

By the time you make up your hives and paint them your outfit will cost you about \$50. Buy the common hybrid bee of California. They can beat the world of bees gathering honey. If there is any thing within ten miles of them they will have it or die in the attempt. Talk of your three and five banders; of your leather-colored Italians; of your bees for business. Nearly all are only names to catch the fancy of the unwary. Look at the piles of money made on "leather-colored Italians" by a noted bee-keeper whose star has gone down in a flood of adulterated honey, and it was all a humbug in the end. They were no better than other bees. Don't be caught with flaring advertisements, "bees for business," and "tons of honey," and other catch-penny terms. If you do you will come to grief. You can find, in the hills and woods of California, bees that can challenge the world as honey-gatherers. No man has bred any trait into them or out of them. They stand to-day—a cross of Italians and blacks—just as vigorous, industrious, healthy, and well marked, showing their Italian parentage, as they did 30 years ago. Sections here will cost you at least \$3.50 per 1000 instead of \$2.66 as Dr. M. puts them. I told you he didn't know any thing.

BEEES NOT "GENEROUS" ROBBERS.

All the great lights in bee-keeping are away behind the age. Skylark, Quinby, Langstroth, Roots, Newman, Doolittle, Dadants, and a host of others—even Dr. Miller, who always "don't know," are in the darkest shades of night. The moment the little ducklings are out of the shell they begin to quack, quack, quack, and order their mother around as if she were the servant-girl. The moment the tenderfoot in bee-keeping gets two colonies, or captures one in the woods, he must quack, quack, quack, and teach the "old stagers" some new trait or trick of the bees which they never heard of before.

Mr. J. H. Andre, on page 697, *American Bee Journal*, makes the astounding assertion that, where bees from two different colonies are robbing the same piece of comb, say it is thrown out to them, one party will retire, and leave the other in possession of the prize. This is so new that it is really startling, and calculated to alarm the whole fraternity, from the fact that it indicates a total change in the nature of

bees. No one has ever seen bees act in so generous a manner, and no one will believe what his own eyes refute every day. The fact is, they will "fight to the finish," even if there are a hundred colonies within reach of that piece of comb. How does he know this? By the size and shape of the bees! Hear him!

"Returning on the line to where the bees were first worked in the woods (and a filled comb had been left to keep the line working in case the bees failed to come to the comb further on), I made an examination of the bees, and found them all of one size and shape, which every one who has knowledge of bees knows that it proves they belonged to the same colony."

Shades of Quinby, Langstroth, and Darwin! Did any one, outside of an asylum, ever hear the like of that? Now, I will furnish friend Andre with a microscope, spy-glass, telescope, hatchet, square, and an 80 foot tape-line; and turn him loose in any apiary where there is only one race of bees, and defy him to show there is any perceptible difference in size or shape of the full-grown worker-bees.

MARKETING CALIFORNIA HONEY: PRACTICAL AND IMPRACTICAL SCHEMES.

W. D. French, of Foster, Cal., has given us some wild suggestions, on page 728, *American Bee Journal*, in regard to marketing our honey. It is true that the dealers combine and set a price to be paid for each kind and class of honey. It is likewise true that this price declines daily until it gets down to the shadow of little or nothing. If we ship to San Francisco, say extracted, the merchants may sell at 6 cents, and, after weeks of waiting, report at 4, or down as low as 3½ cents. Then there is freight, wharfage, drayage, and commission, which generally amount to about 1 cent per pound. Take off the cost of cases and cans, and the producer gets 1½ cents net for his honey. But, listen hard to Mr. French's scheme:

"Now, how are we to solve this problem by securing to the producing class an adequate amount for their product? It has occurred to me that the National Bee-keepers' Union could step in and show its hand. To illustrate:

"Suppose that in each locality a number of the Union members were stationed to receive all honey at a price established by said Union, and paid for when sold, except in cases where people must have ready cash, and where it became necessary in such cases, the same to be paid from the funds of the Union."

Does Mr. French believe that the Bee-keepers' Union is either able or willing to enter into such a commercial enterprise? It would have to establish depots or warehouses at San Diego, Los Angeles, Santa Barbara, San Luis Obispo, Monterey, and San Francisco. It would take a capital of half a million dollars to keep money at all these places to pay those who *must* have

money. They would—nine out of ten—all feel that they *must* have the money for their crop. The Union would have to handle that honey pretty lively, too, to keep up their supply of funds.

Here is a plan by Prof. A. J. Cook, taken from the *Rural Californian*, which is the only one that I believe will ever ripen into a honey exchange in the East:

"A third plan promises the least friction and greatest assurance of success, which, if successful, will soon lead to the adoption of the plan last mentioned, as it will prove to the doubtful that co-operation is feasible and has practical merit. This plan is suggested by the experience of some bee-keepers, notably H. E. Wilder, of Riverside, who, two years ago, took his large honey crop east and disposed of it at a good figure. The plan is to send some man like Mr. Wilder, in whom the bee-keepers have confidence, east with a carload of honey, to be followed by other carloads as he gives orders. If desired, this person could give bonds equal to one or two carloads of honey, and he would remit as rapidly as sales were made. Only those who had confidence in this scheme need join the enterprise; and if the success which is hoped attends the scheme, others would join another year; and as nothing succeeds like success we might well hope and expect that this plan would soon ripen into a honey exchange which would sweep into its embrace all, or substantially all, the apiaries of Southern California. It seems that this plan has much to recommend it, and no insuperable difficulty in the way of its accomplishment. It is to be hoped that this plan may be tried this season. There is no better place for it to materialize than in San Bernardino, Riverside, and Los Angeles Counties, as in no section of the world are there more enterprising, intelligent apiarists. In the hands of honest, pushing, wide-awake men, such a scheme may do much to bring immediate benefit, and be more fruitful of good in opening the door to the grand scheme of co-operation that shall reach, with blessing, to all the honey-producers of Southern California."

This plan is feasible, and promises success. Besides, it was originated by the greatest mind in the United States—interested in bee-keeping—except my own. The only thing that grieves me is that it is impossible for me to take charge of the business before 1897, and they (the bee-keepers) will be compelled to put up with a less capable man till I can get ready to accept the situation.

[See Prof. Cook's article in previous issue.—Ed.]

If you would like to have any of your friends see a specimen copy of Gleanings, make known the request on a postal, with the address or addresses, and we will, with pleasure, send them.



EUROPEAN AND OTHER MATTERS.

AN EXPEDITIOUS WAY OF USING THE BEE-ESCAPE.

By Charles Norman.

A Mr. Sallemund (*Revue*) discovered quite an expeditious way of using the bee-escape preparatory to extracting. "The idea occurred to me not to leave the escape in the hive. I lifted the case rapidly, set it on the escape-board, closed the hive quickly, and carried the case away about thirty meters (40 yards) from the apiary, under the shade of a small arbor. I put a few blocks under the case to have the lower side of the board free, and then turned to some other business. After about an hour I returned, and not a bee was to be found in the case." In other instances the result was always the same. Well, this is splendid, so far as it goes. But how is it when you don't want to empty a whole case or story of its bees, if it has the single frames, rather, that come in question? As I was not at home last May and June, when extracting had to be done at my place, I told my oldest son, Hugo, to try the thing—to procure an empty hive with a conical bee-escape (*a la* Boardman, made of wire netting); to fill it with the bee-covered honey-frames, regardless of the colonies which he would take them from, being careful lest they quarrel (which, however, I did not expect in the least); and, finally, to carry the hive off to some distance under the shade of an orange-tree. The youngster, who has notions of his own, only partially obeyed orders and tried to improve on what "the old man" had told him. My hives, fronting the outside, stand below a pretty long and wide palmetto roof; in fact, you may call the whole a bee-house, except that the four sides are open. By the way, this is not only a good deal cooler than having them in the shade of our trees (quite a consideration in the South), but you can work with your bees when it rains. When my son put the frames in the empty hive the latter was near at hand, just in the passageway between the hive-rows, and here he let it stand, saving himself the trouble of carrying it away. He closed the entrance of the hive, leaving just an opening in its middle, and here he set a little box on which he had attached the escape. Then he placed the cover on top of the hive; but before closing it tight he gave the bees some smoke "to make it disagreeable for them in there." Well, the thing worked like a charm, and it took much less than an hour to have the hive empty of bees, and the frames ready for the extractor.

SQUARE FRAMES, AND WHY.

Regarding the dimensions and size of frames I indorse every word Mr. Boardman has said, whose frames are 13x13 inches inside. Shielded by Boardman I dare speak out and let "Doolittle and the giants" come on, without much fear. But there is one reason of which Mr. Boardman, who uses upper stories, could not have thought, but which has influenced me, and it is the following. I, like *some* others, Mr. Poppleton among them, am in favor of the Long-idea hive. I raise only extracted honey, and find said hive very handy for *this* purpose at all events! But how, if I felt like raising honey in one-pound sections (what would have to be done in wide frames back of the brood-nest)? It being granted that the $4\frac{1}{4} \times 4\frac{1}{4}$ section is the standard, of what size *must* a wide frame be to hold them and at the same time be neither too light nor too heavy? It must measure 13x13, or, perhaps, better, $12\frac{3}{8} \times 12\frac{3}{8}$ inches inside to contain three rows of three sections each, or nine sections all together. If the bee-keeper, though, does not mind handling a heavy frame, and if, at the same time, he does not care to have a square frame, frames that measure $12\frac{3}{8} \times 17\frac{3}{8}$ inches inside, containing twelve 1-pound sections, have some advantages.

All, or, say, most readers of GLEANINGS know what the so-called Wells system consists in; namely, having one common honey storeroom for two separate colonies, so that, like true brethren (sisters, rather), or coöperators, or Bellamy socialists, they throw their earnings together. There are not a few bee-keepers in England, France, Switzerland, Germany, who are well pleased with this kind of combination. Is it not strange, and (I beg your pardon, dear reader) a sign of the narrowness of the human mind, that, till just lately, none of these bee-keepers ever thought of extending the principle which underlies the Wells system, and to ask how it would do to have more than two colonies, yes, to have a whole apiary work together? Well, according to *L'Apiculteur*, a Catholic priest in France, Pere Julien, has conceived the idea at last, and, what is more, has put it into practice and successful operation. The number of his hives and the construction of the whole is not given. The idea is not patented and so any of your readers are free to experiment "along this line" as Mr. Doolittle used to say. Old! for on page 899 of GLEANINGS, I, to my utmost astonishment, noticed that Mr. Doolittle speaks of experimenting "in the direction of," etc. Has he become tired of his favorite expression? or does he "put on style" (it is against good style, you know, to unnecessarily repeat the same word or expression).

BEE-STINGS AND RHEUMATISM.

A French bee-keeper, Mr. Huillon, was suffering from muscular rheumatism, which trav-

eled from one part of a leg to another, and, after having stayed there for some time, took a notion to pay a little friendly visit to the other leg, so that the poor gentleman had to go lame, now on this, now on that leg. In vain he tried many remedies till at last he thought of "our pets" one day. He repaired to his apiary, took a bee by the wings and held it against the place where he suffered. The "pet" worked conscientiously, and he allowed it sufficient time to liberate itself of whatever "poison" it possessed. He then set two more bees at the same work. Soon an intense heat spread on and about the affected part, but all pain was gone. He triumphed. The following morning, however, when he awoke he noticed that Sir Rheumatism had been mean enough to take possession of another part of the leg. Quickly he directed his going-lame-on-one-leg steps to the apiary, and again called for the help of three "pets." Result, the same as on the preceding day. For three more days he pursued the enemy in like manner, when he was entirely delivered from it.

The *Revue* says, "The highest altitude above the level of the sea where an apiary is located in Europe is at Saas-fée (Valais); altitude, 1800 meters, or about 2000 feet; owner, Benjamin Imseug; last crop, 300 kilograms (about 660 lbs.) of honey from 20 colonies.

THE BEEF-DIET TREATMENT.

The Salisbury treatment, which you have been recommending in GLEANINGS of late, is it not, however effective, somewhat one-sided? It seems to be all right for "meat-eaters," in the widest sense of the word; but when one is adverse to eating the flesh of warm-blooded animals, will not fish do? And when one, like so many, is opposed to eating flesh of any kind, will not eggs answer? On page 905 you merely say, "*I presume* that they would not answer for a steady diet." Or would not milk be all right, especially when prepared according to Dr. Alice Stockham's prescription (GLEANINGS, 1893, page 481), when it does not curdle or coagulate, and is conveyed directly to the blood, and can be drank by very weak persons, with impunity? Moreover, if one is a *strict* vegetarian, and shuns eating or drinking any thing that comes from an animal, is science not advanced enough to show up some vegetable product that will do as well as lean beef? Mr. A. I. R. has lately told us of his visit at the Battle Creek Sanitarium, where they live on a strictly vegetarian diet, and of their prepared health-foods. Should not the doctors there be able to point out a food, or combination of foods, which as to chemical composition as well as to digestibility are equal to lean beef? In respect to drinking hot water, is it not a little one-sided too, not to allow an admixture of any kind? Would it not answer to render the liquid more palatable by the addition of fennel,

anise, or some other innocent herb? also of some honey, as even your Battle Creek doctors admit that the same can be used with impunity where sugar would be almost fatal (GLEANINGS, Nov. 1, page 821)?

BICYCLE-RIDING—DANGER OF.

You, as well as A. I. R., have been, and, no doubt, still are, very enthusiastic concerning bicycle-riding. There are—it is a fact—many persons who go through thick and thin with GLEANINGS, especially when Mr. A. I. takes the lead and runs ahead of the crowd or crew with his juvenile liveliness and cheerfulness, and you have certainly influenced not a few “along the bicycle line.” Since I do not remember that you ever cautioned the people against the dangers of bicycle-riding, I clip the following for GLEANINGS:

TAKE IT EASY.

“A French doctor's conclusion is, that no one should ride a bicycle who has a tendency to excessive tension of the arterial system, for this tendency is a great cause of heart disease. Therefore, no one should take up the use of the wheel without the express authorization of a physician; and the doctor should make an examination, not only before the patient begins the use of the wheel, but after he has ridden it for a time. Moreover, the amateur should never ride at a high rate of speed. If one's riding is regular and daily, one may go faster and further with safety; but if riding is interrupted, even for a few days, one must take it up again with caution and deliberation. The temptation to go fast should be steadily resisted.”

Would it not be a strange coincidence if you, Mr. E. R., had caused, or, at any rate, promoted, that bad state of health in which you have been for some time, by overdoing bicycle-riding? And last, but not least, Dr. Forbes Winslow, a well-known English physician, of London, has very decidedly and sharply spoken out against the bicycle-riding of women and girls. He says: “Bicycle-riding is too rapid a motion for the bodily constitution of women, and leads to abnormal appetites and desires.” He firmly asserts that for this very reason moral corruption is on the increase. He also maintains that bicycle-riding promotes abdominal diseases of women, and thereby badly affects the health of the coming generations.

St. Petersburg, Fla.

[There are no substitutes for beef in the vegetable kingdom. Fish will answer after the patient has been on the treatment for a while. Much depends on how “far gone” the subject is in the first place. Eggs, soft boiled, are allowed in some cases.

As to bicycle-riding, of course it can be carried to excess. Did I do it? No, I don't think I did. I never felt better in my life after those long runs of a year ago. I was strong and well, and much improved; but late in the fall of that year my old “la grippe” came back,

and then quickly followed all my other old ailments until I got clear down. I went on to the vegetarian diet, and grew gradually worse; and then, and only then, I followed the advice of my wife—something I ought to have done before—and took the Salisbury beef-diet treatment, and to-day I am almost a well man, and stronger and better than I have been for years.

Yes, I know there are a few physicians who claim that the use of the bicycle is injurious to women; and while it may prove to be so in a few cases, I know there are many other physicians who think differently. I never knew of a case where it did any harm, and I have known many who received a positive benefit.—Ed.]

EXPLANATION.

HAS THE NORTH AMERICAN BEEN A “SORT OF DEESTRIC SCHOOL” FOR BEGINNERS?

By Rev. W. F. Clarke.

On page 845 of GLEANINGS, Dr. Miller expresses a wish to have me explain what I meant by saying that the North American has always been “a primary class of bee-keepers.” Begging the doctor's pardon, that was not what I said, exactly. It was, that the association “has been for the most part a mere school for beginners, and there has always been a strongly marked dislike of thoughtful papers and really able discussions.” Again, “Instead of a select gathering of advanced bee-keepers, who could discuss vexed and knotty questions in apiculture, we have held a sort of ‘deestric school’ for those who would show plainly that they had never read a book on bee-keeping in their lives, and know nothing in regard to disputed points in the higher realms of apiculture.” I think these quotations make my meaning sufficiently plain. My idea was and is, that at a representative bee-keepers' meeting we have a right to look for what we don't get in manuals of bee culture; namely, a face-to-face discussion of live questions that have arisen in the practical part of our pursuit. Owing to the preponderance of local bee-keepers, many of whom are not very well up in the business, our time has been occupied in explaining to tyros what even beginners in bee-keeping may be very properly supposed to be familiar with.

There is another matter on which the doctor brings me to book. He says, “At Toronto, Mr. Clarke said of the North American, ‘When we get down so that we have to pay only 25 cents a year, I don't want to belong to it.’ Why? I think both Mr. Clarke and myself have got down so that we don't have to pay even 25 cents a year. Is that any reason we do not want to belong to it?” I thought “Honorary Membership” was a getting up in the world. But I was discussing the proposition to try to increase the membership of the National Bee-keepers' Union by reducing the fee from \$1.00 to 25 cents. The Union has never had any honorary members. My idea was and

is, that, to reduce the fee to so low a figure, would rather tend to diminish than increase the number of members by making a mean, beggarly affair of it. People would naturally reason that it can not be worth much if it is rated at so small a price. I should not care to be even an honorary member of a twenty-five-cent organization. I do not believe in the "cheap John" style of doing business. I think a fair price must be paid for any thing really worth having.

Guelph, Ont., Nov. 29.

BEE KEEPERS AT FARMERS' INSTITUTES.

AN INTERESTING TALK FOR BEGINNERS.

By H. R. Boardman.

The farmers' institute has from time to time been mentioned as a very proper place and opportunity for the live bee-keeper to entertain and enlighten his neighbors with bee-talk. I was placed upon the program at our institute meeting here last winter for such a talk. Now, to talk to an audience of bee-keepers is one thing, and to an audience like that of the institute meeting, where the interest is centered upon any thing and every thing excepting bees, about which they know nothing, is quite another. It is to the speaker something like talking to a class of children. I was severely puzzled to decide what I should say in order to secure the attention of my audience.

This is about what I said:

The bee-hive, to the masses of mankind, is a deep mystery, a sealed book; and there are clinging about it the cobwebs of superstition that the light of civilization has not yet cleared away. But it is encouraging to know that the wheels of progress are moving rapidly forward, and the mysteries and superstitions of darkness are being dispelled by the light of intelligence and reason.

There are from 15,000 to 40,000 bees in a colony, varying with the season of the year. There are three kinds of bees in each colony—the workers, the drones, and the queens. The workers do all of the work in the hive, gather the honey and pollen, supply the hive with water, elaborate the wax, build the combs, prepare the food, feed and care for the young bees, do the general housework, attend to politics, declare war, defend the hive against intrusion or invasion, ventilate the hive, evaporate the honey, guard and protect the queen, etc. They are active, industrious, energetic, untiring hustlers, jealous of their rights, and are easily offended. In defense of their hives they exhibit a patriotism unparalleled in the world. They will, on the slightest provocation, sacrifice their lives without the slightest hesitation. They all bear arms, and carry their weapons concealed. The motto of their government is, "The greatest good to the greatest number." They have no hospitals for the sick or maimed. When they have outlived their usefulness they are dragged out of the hive, without waste of sympathy or sentiment.

Robbing and freebooting are common among them, and carried on with a persistence worthy of a nobler cause.

In sex the workers are females undeveloped, and sometimes called neuters.

In their work they are divided into classes according to the capability of age. The young bees are nurses, and do the general housework, remaining in the hive until they are 10 to 14 days old, when they are graduated to field-laborers, and other duties in regular order of their age. The old bees will act as nurses and housekeepers, only in absence of

young bees in the hive. "Old bees for counsel, and young bees for war," is a maxim they haven't caught on to. The age of the workers is from 35 days, during the activity of summer, to 6 months or more, during the fall and winter, when they remain in an inactive dormant condition, sometimes called their winter sleep.

THE DRONES.

The drones are the males. They do no work. Some think that they were created expressly for an object-lesson to caricature certain members of the human family who spend the sunshine of life waiting for "something to turn up." I consider this a base libel (on the bees). Since I have come to know these clumsy, good-natured, harmless fellows, my sympathies have been enlisted in their behalf. Nature did not intend that they should take part in the work of the hive. They were not provided with a honey-sac for carrying honey, nor a tongue for gathering it. They have no wax-pockets nor pollen-baskets, and they are not allowed to carry weapons, even in self-defense; so they very prudently keep out of the way, and let the women-folks do the work and defend the hive. They appear in a normal colony only during its prosperity in the summer season. Their presence in the hive denotes preparations for swarming. They are mercilessly slaughtered or driven from home by the workers at any time when the honey-yield becomes meager, simply as a measure of economy, or at the close of the season when they have outlived their usefulness. It is difficult to determine how long they might live if their lives were not beset with so many uncertainties—probably about as long as the workers.

THE QUEEN.

The queen is the mother of the entire colony, and is the only perfect female among its teeming thousands. She has no royal prerogative, as usually attributed to her. She does not sit upon a throne, nor does she rule or govern in any sense. She does not lead out the swarms when they issue; on the contrary, the swarms invariably lead her. Mother is her prerogative in the hive, rather than queen. Her importance in the hive is recognized by the workers, and she is carefully fed and watched and guarded in all her movements.

Queens vary as much as do hens in their laying proclivities; and the prosperity of the colony depends very much upon the queen in this respect. A poor queen will surely result in an unprofitable or worthless colony; and the bee-keeper who is looking after his best interests will supersede such queens with those more valuable. A good queen may lay 2000 to 3000 eggs daily; and there is some very good authority for a larger number at times. But this is not much of an egg-record either. The queen of the termites, or white ants, comes forward with a record of 80,000 as a day's work, and vouched for by good authority. But she devotes her entire attention to the egg-business.

The queen is provided with a sting, which she uses only to destroy rival queens.

The eggs laid in the combs by the mother-bee are hatched into a wormlike larva, in three days. It feeds voraciously, and grows rapidly upon pabulum furnished by the nurse bees, composed of honey and pollen. After feeding 5 days if a worker, or 6½ if a drone, the cells are sealed over; the embryo bee spins a silken cocoon about itself with ingenuity that surpasses human conception, and subsides into a dormant state which is called the pupa or imago state. This is followed by the transformation to the perfect state, which requires 21 days from the egg for workers, 24 for the drones, and 16 for the queens.

When the queen is about six days old she will come out of the hive and take a flight, attended by a retinue of drones. This is the occasion of her wedding-tour. In two or three days she will commence laying, and never leave the hive afterward except to accompany a swarm. Her fertility lasts to the end of life, which is usually three or four years. Virgin queens sometimes lay eggs, and they will hatch, but produce only drones. Drones are all produced from unfertilized eggs. This is one of the wonders of nature, and may be somewhat astonishing to some, but it is nevertheless true. If from any cause the queen is lost from the colony the bees set about rearing another, which they do from a common worker-egg or larva, by building around it a large thick cell, and feeding a superabundance of the same kind of pabulum, apparently, as that fed in smaller quantities to the other

larvæ. Why or how this results in a queen, so different in character from the rest of the bees, has never been learned.

Several queen-cells are built at the same time, as if to provide against possible failure. The first queen hatched kills the others, usually by biting open the cells and stinging them, unless swarming is contemplated, in which case the bees cluster tightly over the cells and prevent their destruction. One queen in a colony is the rule. They are very jealous of their rights, and settle the question of supremacy in mortal combat when more than one queen appears in the hive.

THE PRODUCTS OF THE HIVE.

Besides honey and wax there are two other products—pollen and propolis—making four distinct products of the hive. Honey is the principal food of the bees, and is nectar gathered from the flowers, and sweets from various other sources, which is licked or sucked up with the tongue, and conveyed to the honey-sac, and carried to the hive and delivered to the nurse bees, who dispose of it in the combs, where it remains unsealed until it goes through a process of evaporation or ripening. When satisfied with its condition the bees seal it over and it becomes the finished product. It requires, on an average, about 20,000 bees to carry 1 lb. of nectar from the field to the hive. When nectar is abundant in the flowers the bees gather and store it with astonishing rapidity, and usually accumulate a surplus—that is, more than they can use—which constitutes the reasonable share of the bee-keeper. The bees that gather and store the honey with so much care and labor do not live to enjoy it, but it is consumed by their posterity of the following season. It is used largely in brood-rearing at the beginning of the season in the spring. How faithfully this animal instinct is portrayed in the human family!

WAX.

Wax is the material from which the combs are built. It is not gathered by the bees, but is elaborated or secreted in the wax-pockets on the under side of the body, and extruded in little thin white pellets, or scales, from between the segments, or rings, from whence it is taken and wrought in a most wonderful manner into combs. The secretion of wax by the bees is somewhat analogous to the secretion of fat by animals. It is only during the season of honey-gathering, when the bees are continually gorged, that wax is secreted. Only when combs are needed does nature furnish the material from which to build them. The same results may be obtained by liberal feeding. Combs serve the purpose of storage for honey, and for cradles for the infant bees. There are two sizes of cells, apparently made to fit the two kinds of bees. The workers are raised in the small cells, and the drones in the large ones. The larvæ cells are invariably built where only storage combs are needed. Note the economy!

POLLEN.

This is the farina, or fertilizing dust, of flowers. It is gathered and stored in the combs by the bees, in considerable quantity. It is known also as bee-bread. It is gathered in little pellets, and carried on their posterior legs, on the outside of which nature has provided a place most wonderfully adapted to this purpose. The bees kick these little pellets off into the cells of the comb, and the young bees pack them in with their heads. They will gather flour, and various other substitutes for pollen, in an emergency. It is intensely interesting to watch the process of gathering the pollen, and the packing of it upon the pollen-baskets. Honey and pollen, in a partially digested state, constitute the pabulum upon which the larvæ is fed, and is absolutely necessary for brood-rearing.

The gathering of both honey and pollen has another phase that is very interesting as well as important. It is the fertilization of the flowers by the bees by the carrying of the pollen-dust from one flower to another. The flowers are robbed of their sweets only to be enriched.

PROPOLIS, OR BEE-GLUE.

This is a resinous substance which the bees gather upon their legs in the same way that they do pollen, and is used by them to seal up cracks, and cover rough places in the hive, and to strengthen the combs. When gathered it is soft and pliable, but hardens with age.

Note.—My efforts were rewarded by the best of attention, and many flattering compliments were paid me at the conclusion of this talk.

East Townsend, O.

[Perhaps the foregoing address may seem a little elementary for a bee-journal; but we have a list of beginners among our subscribers who, I know, will be glad to read this, especially as it comes from one of our brightest and most successful bee-keepers. What Mr. B. has said, I know comes from solid experience, with a very little that he perhaps may have picked from the general apicultural literature.—ED.]

THAT WINTERING SYMPOSIUM.

LAYING OUT A QUADRUPLE-HIVE APIARY.

By E. France.

I was asked to write an article on the subject mentioned above, but was unable to do so, on account of sickness—first myself ten days, then my wife. Then as I did not get the article written in time I was asked to review and comment on the others.

The first article, by J. E. Crane, take it as a whole, is an excellent one. I find no fault with it, except one point—a very important part of the winter problem. He says he fed 8500 lbs. of syrup this fall. Now, I want to know why he fed the sugar syrup. Did you feed that syrup for the same reason that I fed mine syrup—because the bees did not gather enough honey to winter on? or did you take the honey from the bees, and feed syrup, *knowing* by your experience that syrup, as you make it, is a better winter feed than honey gathered and stored by the bees? Do you practice taking away the honey, and then feed syrup for winter feed?

The next article, by J. A. Green, is excellent. His ideas of an abundance of feed for winter just suit me, as my motto is that a great deal too much honey is just enough. I don't want to feed bees in the spring if it can be avoided. It doesn't do any harm if the bees have a few pounds left over. I believe all who winter outdoors in the North agree that the hives must have thick walls, or double, filled in with chaff or some other packing. I see that Mr. Green packs four hives together to winter, and puts a large box around the four packs inside of the large box, around the single hives. I think it would be less trouble for him to use a quadruple hive, without side packing. He would then have his four colonies ready at any time for winter by filling the top chamber with straw, or putting on top cushions. That is the way we do it. It is just as good, and saves lots of hard work. I see he also uses sealed covers. So do we.

All the other articles pertain to indoor wintering. As we winter all outdoors, I am "not in it," and have nothing to say. I will say this: Take all the articles together, they are *good*—very good, and I think it will be a long time be-

fore you get as many articles together again, on any subject pertaining to bee-keeping, as good as those are.

NUMBERING HIVES.

Replying to S. E. Miller, page 802, Dec. 1st, I would say: We used to number all our hives, and keep records of every thing that was done with them; but of late we do not keep any records at all — only a card tacked on top of the honey-boards of each colony, and that is used only to show the condition in relation to the queen. When we did have our hives numbered we used a method similar to Mr. Miller's, but we had four in a group. You see we use a quadruple hive. We numbered the stands, beginning at one end of a row at the corner of the yard, then 1, 2, 3, and so the length of the row, and back on the next row, taking the rows in turn back and forth until all were numbered; then the divisions of the hive were all the same. The southeast corner was division one; the northeast division was D. 2; northwest, D. 3; and southwest, D. 4. The divisions all being the same, it is easy to remember them.

A nice way to lay out an apiary for quadruple hives is to have 5 stands in a row, and 5 rows; 5 times 5 is 25 stands; 4 colonies in a stand, 4 times 25 is 100 colonies. Place those stands 16 feet from center to center. Then I would take the center stand for a place to put in my extracting-tent. That would give us 96 colonies in the apiary. But I would not change the numbers of the stands, because I used No. 13 for the tent. It is very handy to have those rows contain just 5 numbers, as you can always catch at a glance the number of the stand where you are by just looking up and seeing which row you are in. It is easy for me to keep those numbers in my head. I don't want to bother with numbers on the hives. But unless one is raising queens to sell, what difference does it make about the numbers? We don't keep them any more. We now tack on to each hive, on the honey-board, a clean piece of white cardboard, about 3 inches square. On that we write dates, and any thing we want to remember about the queen, and that is about all we care for. The condition of the colony shows for itself when we open it, and there is very little recording necessary; and what we do is done with very few figures and letters.

After our bees are put into winter quarters we never meddle with them until warm weather in spring. Some fine day in April we go to one of our out-yards and open every hive to see if they have feed enough. Then we note on the cardboard the condition of the colony. For instance, first the year, 1896 (that is not repeated again during the season). Then say 4—10 (Apr. 10); then the condition of the colony, which may be good or H-1 or H-2 or H-3. H-1 means honey enough to last through; H-2 means that the colony wants feed within a month; H-3

means very little honey — must be fed soon. If there are any poorer than H-3 we change an empty comb for a honey-comb from some colony that can spare it. We note also the strength of the colony by B-1, B-2, etc. Then if there is any feeding to do we note down the amount the yard wants, and take that account home, and come and feed when it is necessary. When it is time to clip queens (which should be done before there is danger of swarms) we go over every colony and see that the queen is clipped. If we find a queen that has been clipped we mark on the card "q. w. c.," which means "queen was clipped." If we find a queen with whole wings we clip her and mark "c. q." We have other short marks for what we do through the season. There is plenty of room on a small card for every thing for the whole season, and it is good for only the one season, any way.

Platteville, Wis.

HOUSE-APIARIES.

A FEW HINTS ON THEIR CONSTRUCTION.

By E. E. Slingerland.

Mr. Editor:—I note in GLEANINGS, page 903, you are about to build a house-apiary. Perhaps a few hints gleaned from my experience may reflect a little light on your plans. I have had the pleasure of handling bees in a house-apiary for the past six years, and I indorse all that has been said in favor of them, and will add that this is certainly the way to care for bees in order to save labor, which, you will agree, is the greatest item of expense in the production of honey.

To be sure, the common outdoor hive must be used, resting on shelves; the building painted in colors, large openings not less than 4x8 in., cut in various forms. These are closed in the fall with a slide or board on the inside, with small auger-hole, or slat, to admit entrance to hives. In settled winter weather a board closes all up tight on the outside. For admitting light, one opening with shutter is sufficient for every two hives. Don't make the building too large; i. e., to contain any more cubic feet of space than is necessary for convenience in handling, on account of being much better for wintering if in close quarters.

A raised earth floor will keep dry, and does not sound or disturb bees when walking or working with them. With these large openings at the entrances, and the openings to admit light at the hive one is at work with, I have not been troubled with smoke to speak of; but when I build another house I shall put in ventilators to carry off smoke. Of course, I could put them in the building I am using now; but only on close sultry days have I felt the need of any, so I neglect to do so.

I will cheerfully give any further explanation or detailed description of my plan if desired.

Troy, Pa., Dec. 11.

[The idea of having a raised earth floor is capital. It would, as you say, be noiseless; and, being raised above the surrounding ground, it would be dry. I have noticed in our house-aplary, when we walk over the board floor just after opening the door, that there would be a response in the way of loud hummers.—Ed.]

WHAT SIZE OF BROOD-CHAMBER?

IS THE EFFICIENCY OF A COLONY MEASURED BY THE SIZE OF ITS BROOD-NEST? WILL A GIVEN COLONY PRODUCE MORE HONEY IN A GIVEN SPACE OF EXTRACTED THAN OF COMB?

By Dr. C. C. Miller.

That belated footnote on page 779, 1895, has interested me very much, and I've studied over it a good deal. One point of special interest is that you say in the three-story hives with brood in twelve or fourteen frames you got much more honey in proportion than from colonies having two stories and the queen confined wholly to the lower story. Nearly every year for several years I have had in each apiary one or two colonies used as a sort of reservoir, in which were put frames of brood or honey to be taken care of, and to be drawn upon whenever needed. These "piles," as we called them, would run up three and four stories high, and it always seemed to me that they stored more honey in proportion to the number of bees than other colonies; and, like your "hummers," not one of the "piles" ever offered to swarm. But then, one reason for their not swarming may have been that they were weak colonies at the beginning of the harvest—too weak to take sections, and their growing strong was a work of degrees.

Against the view that room alone prevented swarming, stands the fact that, in the past season, preparations for swarming were made in colonies having two stories, one of the stories being very little occupied, and no excluder between.

It would be a very nice thing if we could be sure that the efficiency of a colony could be definitely measured by the amount of room allowed the queen for breeding; and for extracted honey I'm not sure that I ever saw objections made by American bee-keepers to allowing unlimited breeding-room. But in the German journals I have more than once seen the statement that, in certain seasons, the colonies which had unlimited breeding-room gave no surplus, while those with limited room for breeding gave a surplus. That makes me just a little afraid that *sometimes* such large breeding-space may be detrimental. I have, however, never seen any evidence to that effect in my experience.

You say, "In running for comb honey the

case is so different that I think I should try to confine the queen to the lower story." I know it is the orthodox thing to consider that comb-honey rules have little or nothing in common with the rules for extracted honey; but in many cases it seems something of a puzzle to me why there should be such a difference. Take your hummers. With the queen spreading herself in two stories, and only two combs in those two stories without brood, you got a lot of extracted honey—more than you would have done if the queen had been confined to the lower story. You could have taken very little honey from the second story unless you took it from combs containing brood, and nowadays it isn't considered the best practice to put into the extractor combs containing brood. So it is perhaps fair to conclude that you got the honey mainly from the upper story, and that you would have got about the same results if you had extracted from the upper story alone.

Now, the question that puzzles me is this: If letting the queen have two stories below gave more extracted honey in the third story, why shouldn't it give more comb honey in the same story? Just explain that to me if you can.

It has been unfortunate for me that the past two seasons have been seasons of utter failure, so that, so far as experience goes, I am but little in advance of where I stood in the year 1893; but from what little experience I have had, and from watching with intense interest the testimony of others, I feel pretty sure that, to confine a queen to eight frames for the whole year, is not the best thing. With only eight frames a good queen will not develop so strong a force of bees as she will with more.

One of the questions yet unanswered is, whether it is better to allow the same number of frames all the year through, or to limit the queen during the harvest. Another is, whether it is just as well to have twelve or more combs in two stories as to have them spread horizontally in a single story.

I have eight colonies in eleven-frame hives, and the rest in eight-frame hives. Until I have different light from what I now have, my practice shall be to let the queen have all the room she will occupy before and after the honey-harvest; and until I know more about it, most of the eight-framers will be reduced to one story during harvest; but for the sake of comparison some will have two stories during harvest. Of course, all of this is on the supposition that I shall live long enough for a honey-harvest to come around this way once more.

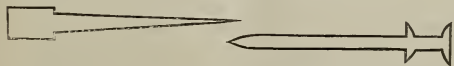
FRAME-SPACERS.

Now for the footnote on page 776. With two months more of experience, and that through the worst of the year for propolis, I am very decided in the opinion that I like best, of any frames I have ever tried, those with all parts, top, end, and bottom bars, the same width, and

spaced with nails. That makes fixed distances at all parts of the frame; and not only fixed distances, but all distances the same. With the Hoffman, or any other frame having the spacing mostly or entirely at the top, the frames may be fixed at the bottom, but they are fixed at irregular distances.

You say finishing-nails are an obstruction to the uncapping-knife. That's no objection to producers of comb honey, and please don't deny us what may clearly seem the best, just for the "convenience of supply-manufacturers." Poor supply-manufacturers! They get it on both sides: One man blames them for encouraging changes, and another blames them for trying to keep the number of supplies down to as low a number as possible. But if I were running for extracted honey exclusively, I should still want the frames with four nails in each. As the nails on each side are at only one end, if at the time of uncapping the nails be at the upper end I do not see that they need to be so very much in the way of uncapping; and if the nail-heads be always kept uppermost, they need not catch in the meshes of the wire cloth of the extractor. The extractor can be made so that the wire cloth need not come up as far as the nails. Come to think of it, the nails would be at the bottom with a reversible extractor. Well, have the wire cloth short enough to clear the nails both bottom and top. Make the extractor accommodate the frame, rather than have an inferior frame to accommodate the extractor.

You say the finishing-nails would not stand a hard enough squeeze without pushing the nail in farther or making the head of the nail punch into the opposing wood. You're right, as I found by further experience. And the same objection holds to a less degree against the furniture-nails. You say, try those that are perfectly conical. I hardly think you mean that, for that would be worse than the finishing-nail, for the head would come to a sharp point. You probably mean hemispherical. But still that would not be so good as a perfectly flat surface. We want the point of contact just as small as can be without allowing it to punch into the wood with a hard squeeze. A common wire nail, heavy enough so it will not be driven farther into the wood by a hard squeeze, with a flat head $\frac{3}{8}$ in diameter, would perhaps answer. Still better might be a nail with a head just $\frac{1}{4}$ inch in thickness and $\frac{3}{8}$ in diameter. That would make a sure thing of always driving the right depth, without trouble. Or perhaps it might be better to have a two-headed nail, the one head within $\frac{1}{4}$ inch of the other.



I find in actual practice that the catching of the nail-heads is rather a matter of theory, and counts very little. I feel very confident that, if

you should fairly try, side by side, the furniture-nails with other nails, you would, like myself, change your mind.

With nails as spacers, there is still left the trouble of the ends of the top-bars being glued. I wonder if vaseline would help that. If the frames could be handled as easily, it might be a good thing to have the top-bar of uniform width throughout, $\frac{1}{4}$ inch less at each end than the usual length, and then a spacing-nail driven into the end. I half believe I'd like to try that. But it might be inconvenient to handle.

Marengo, Ill.

[Yes, I think the case of the comb-honey colony and that of the extracted are quite a little different. Bees will store honey much more readily in brood or extracting combs, because, I suppose, they are not divided up into little squares of 4 inches. My observation has always seemed to indicate that bees will begin to store in extracting-combs sooner than in sections, even when the latter have partially drawn-out combs. In other words, I believe it takes more pressure to induce bees to go into sections than into extracting-combs. That being the case, for comb honey it is desirable to reduce the size of the hive, and force the bees to put it into a place divided off into little squares whether they like them or not. There, I believe that answers your puzzle, so far as I am able to do so.

As to your other question yet unanswered, whether it is better to allow the same number of frames all the year through, or limit the queen during the harvest, from what facts I have been able to glean from different bee-keepers who have reported on this matter, I think the majority decide that it is better to give the queen an abundance of room during the breeding-season, and, later on, to reduce this breeding-room just about the time honey begins to come in.

I have no doubt that your nail spacers, such as you illustrate, will work very nicely so far as the convenience of a comb-honey producer is concerned; but there are just two things that stand in the way of their general adoption. The first—and perhaps we could remove that if we could be sure of the demand—is the cost of making such spacers, because there is nothing like them *already* on the market, to reduce their cost. The second is, that extracted-honey producers dislike nails sticking out—first, because of the uncapping-knife; and, second, because of the catching of the nails in the meshes of the wire cloth. I know you have alluded to this point; but you produce no extracted honey, and I think you do not fully appreciate the objections of your extracted-honey brothers.—Ed.]

POULTRY WITH BEES.

By Dr. H. J. Ashley.

After five or six unprecedentedly bad years for our favorite pursuit, the question arises in the minds of many bee-keepers, "Is there some occupation I can combine to advantage with bee-keeping, or must I sacrifice my stock of bees, together with fixtures and appliances, that I have spent years in perfecting?" This question has come to us many times; and we believe from personal experience that the rais-

ing of poultry furnishes just what we are looking for; namely, an occupation not laborious, but whose returns for faithful attention are sure, and where the most active labor comes at that season of year when bees need the least attention. This is equally suitable for the bee-keeper who does the work himself, or for him who, like ourselves, while actively engaged in professional work, wants something at home which, by way of change, furnishes pleasure and relaxation, and still makes it profitable to keep a good active man of all work. By keeping a few standard-bred fowls of a variety giving a profusion of eggs and fine bodies, we have the pleasure of seeing fine birds of uniform size and color, and having on our tables fresh eggs, and fowls of our own raising; and, even without any special effort by advertising, there will be a demand among our friends and neighbors for settings of eggs, with an occasional call for a trio, or pen of birds from our pure-bred stock, which, sold at even a moderate price, will soon more than repay the difference in the original cost between starting with thoroughbreds and common fowls; and in nothing does blood tell more surely than in fowls.

Our acquaintance with bee-keepers, as formed at conventions and elsewhere, has proven to us that they are universally intelligent and skillful in those nice little points of observation and care that go to make up a successful poultry-keeper—especially if artificial incubation is practiced. It does not require a great outlay of money to purchase a small self-regulating incubator and a brooder which, even in the hands of the novice, does very satisfactory work, enabling one to hatch his chicks in March or April, thus giving them pullets that will begin laying in November; and, with proper care, will just “shell out” the eggs during the winter months when prices are high.

In May or June, when the bees begin to require close care and attention, the chicks will be out of the brooder; and, if allowed free range, will require little care, save feeding morning and night.

At this time eggs are low; and, if desirable on account of lessening labor, or for lack of room, the year-old fowls may be disposed of, either in market or, as is often the case, to farmers who desire to introduce standard blood into their flocks, thus leaving June, July, August, and September to devote almost exclusively to the bees. In October, dispose of extra cockerels and cull out the pullets, and begin to prepare them for their winter's work.

As one by experience becomes proficient in the use of incubator and brooder, broiler-raising offers a very substantial increase in the income from the poultry-yard.

Chicks hatched in January will be ready for market in March or April, if of a variety suitable for broilers, and should then be sent to city

market, pullets and all, where they will bring fancy prices, leaving brooders ready to receive our March-hatched chicks from which to select our pullets for the next-winter layers.

Bee-keepers will find the shop and tools so necessary to the apiary just the thing with which to make the numerous little appliances which go with the chicken and egg business.

Machias, N. Y.

CALIFORNIA WILD BUCKWHEAT.

WHERE FOUND; HONEY OF GOOD QUALITY; THE RAMBLER ARTICLES.

By A. Norton.

Rambler calls for notes from others relative to the California “wild buckwheat” as a honey-plant (see Dec. 15th issue). I will merely support his testimony, for he has stated the case just about as I have observed it, not only as to the value of the plant for honey, but as to the conditions of the seasons that are most favorable to it.

In the season of 1884, after an unusually heavy rainfall for the winter, almost all of which fell after Jan. 20, supplemented by that great rarity for California, two considerable rains in June, I had bees in Gonzales, Monterey Co., that gathered from 50 to 60 lbs. of nice honey per colony in August after I had taken what I thought to be all the surplus that I could get. I left only a few colonies in shape for storing this extra surplus, otherwise I might have obtained much more. The honey was light amber, and not very thick, but possessed a good flavor.

This plant, *Erigonum fasciculatum*, is found principally in the southern counties of California; but it is abundant in many parts of Monterey Co., and will, I doubt not, be found scattered over about the same area that is occupied by the black sage, and extending beyond the eastern limits of the latter, especially in the south. It is rather remarkable that the genus *Erigonum*, which is not represented east of the Rocky Mountains, but is about as closely related to smartweed and buckwheat as beans and peas are to clover, has upward of 60 species in California; and yet that *E. fasciculatum* is the only species generally known as a honey-plant.

Here at Monterey, and southward along the coast strip as far as Santa Barbara, this species is not frequently found, but is replaced by another of the same sub-section of the genus *E. parvifolium*—taller, more leafy, and with larger heads of deeper-colored flowers. The bees work on this sparingly in the fall. Has Rambler found this as far south as where he lives? If not, he should have met, near the coast in Los Angeles Co., especially at San Pedro, the other species of that sub-section, *E. cinereum*. These three species are so closely related as to form a sub-section by themselves. If Rambler

has found this last-named species I should like to hear whether bees work upon it.

In Monterey Co. I have seen bees a little on *E. angulosum*, of quite a different section of the genus. Perhaps it is no more singular that so few species of so large a genus are frequented by bees than that the *Melilotus parvifolia*, one of the sweet clovers, is very common in California, but I have never seen a bee working on it anywhere.

Let me here cast my ballot in favor of Rambler's still continuing to write for GLEANINGS. I doubt whether any series of articles will be more missed than his. There is plenty to see in California yet; but if he thinks it is getting to be old to him, then let him and Wilder and the pony branch out into Arizona. If he thinks his ranch is beginning to require his constant presence, we can send some ladies down there to make him think differently. A. NORTON.

Monterey, Cal., Dec 31, 1895.

AN UNCAPPING-BOX.

A CHEAP HOME-MADE UNCAPPING-BOX, WITH DEVICE FOR REVERSING COMBS FOR UNCAPPING.

By H. W. Mitchell.

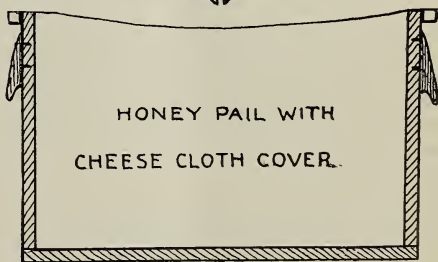
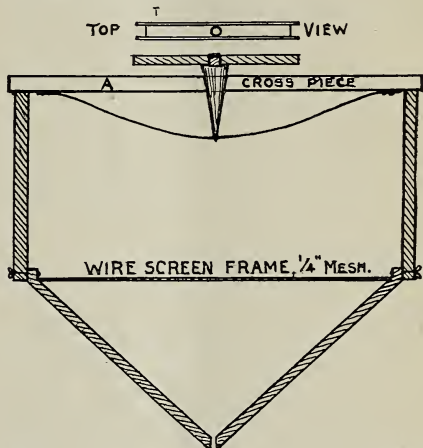
The cross-piece A is made of a strip of pine 2 inches wide, and long enough to reach across whatever receptacle is used for uncapping over. In the center of the strip, bore a $\frac{3}{4}$ -in. hole for a spindle to pass through. The comb-rest is a piece 1 inch wide, and as long as the end-bar of the brood-frame. On each side, near the ends, nail a narrow strip of heavy tin projecting beyond the ends of the strip about $\frac{3}{8}$ in. (these little lugs hold the top-bar of the brood-frame in place, and prevent its slipping off sidewise when whirled around).^{*} In the center of this revolving support I bore a $\frac{1}{2}$ -in. hole, and insert the upper end of the spindle, and fasten securely. The spindle itself is about 6 inches long, and passes through the hole in the cross-piece, fitting snugly, and the point fits into a small hole in the tin brace (just below A), which is a 2-inch-wide strip of tin nailed to the cross-piece in the manner shown in sketch, the object being to give two bearings to the spindle, and prevent any wobbling of the comb-rest.

To uncup, place a comb on end on the rest; slice off one side, whirl around, and uncup the other.

The spindle can be made of hard wood. I myself used the socket of an old garden-hoe, with enough of the handle left to mortise into the comb-rest.

The arrangement can be placed on top of a box or a half-barrel, or any thing that will hold

the uncappings. I use a box with a hopper-bottom, as shown in the lower sketch. On a frame that just fits the inside of the box I nail $\frac{1}{4}$ -inch-mesh tin wire netting (see upper sketch). This frame drops inside of the box, and rests where the hopper shape begins. This serves to hold the cappings, and allows them to drain. The honey runs down the hopper through a small hole into the receiver underneath, which is covered with cheese-cloth.



My extractor is fastened to a table that is long enough to allow of this box being fastened to it at the right-hand side, and at a convenient height for uncapping. By having the box large enough to hold a day's uncappings they can drain over night, and be dry enough to put into the solar wax-extractor next morning, ready for a fresh start.

AN APIARY KNIFE-CHISEL.

This I find very handy to pry off covers or bodies, loosen frames, scrape off tops of frames, cut out pieces of comb, etc. It is made by tak-



ing a $\frac{3}{4}$ -inch Addis wood-carving chisel, and grinding one side to a chisel edge. I use a wood-carving chisel, as the blade is much thinner than an ordinary carpenters' chisel, and the steel of extra quality. I like this better

^{*}The engraving at this point is not strictly correct.—ED.

than any thing else I have ever tried, for the purpose for which it is adapted.

REPORTS FROM THE MANGROVE BELT.

These have been rather conspicuous by their absence this season, owing to the freezing-down of our mangroves. Yields have been light, although, so far as my own apiary is concerned, I have no cause for complaint, as I managed to secure something over 100 lbs. per colony. While this falls far short of last season's yield, it does very well, and is about the best for this vicinity.

I see the hive discussion is still on deck; but, as we crackers say, "it looks like" all the points that are likely to be brought out have come to light. I should like to know how many bee-keepers have been induced to see the error of their ways, and have changed the size of their hives, by the discussion.

I am still a believer in the eight frame, after using the ten frame almost exclusively for several seasons; also several seasons' experience with the one-story "Long Idea" Langstroth frame. I feel certain that, for my use, with my methods, the eight-frame Langstroth is far and away the best. For a weak colony, an eight-frame body is large enough to build them up in; for a fairly good one, two bodies with 15 frames is about right; and for a strong flourishing one, ready for the honey-flow, three stories with 22 frames hit it about right for me. So with the eight-frame hive I can come nearer making the "punishment fit the crime" than with any other.

Hawk's Park, Fla.

[I have already announced that the hive discussion is to come to a close.—ED.]

THE ADVANTAGE OF NUMBERING HIVES.

THE CONVENIENCE OF THE RECORD-BOOK.

By Emma Wilson.

Suppose I met a man while down street to-day whose name I did not know, and wanted to tell Dr. Miller, when I came home, who it was I had seen. I should most likely begin to describe him, tell whether he was tall or short, fat or thin, dark or light, and how he was dressed. If there was any peculiarity about him I should mention it; and after I'd been to all that trouble he might not be able to tell who he was. Now, if I had known his name was John Smith, and there was only one John Smith in the place, I need only have said, "I met John Smith to-day," and he would have known immediately whom I meant. Just think how much time and trouble I might have been saved if I had only known his name! Now just imagine what a muddle we should be in, most of the time, if people were without names!

Now, it seems to me just about as necessary to number or name colonies of bees as it is to

name people. If I had to stop and describe each colony of bees by some peculiarity of hive or location every time I wanted to refer to it, instead of saying No. 12 or No. 9, I believe I should get discouraged, and just give up. It seems to me a bee keeper's time is too valuable to be wasted in that way.

For instance, suppose Dr. Miller told me, "Get a frame of brood and bees from No. 2 and give it to 49," it wouldn't take him very long to tell me, nor me very long to do it. But, oh dear me! suppose our colonies were not numbered, and he had to stop to describe them. I might not understand perfectly, and get the wrong colony, and what a muddle it would be! Then think of similar orders, many times a day! I don't believe I'd want to work in the apiary very long.

It seems to me pretty clear, if two persons are at work in the same apiary, and the colonies are to be talked about, that they need names of some kind, and I don't know of any thing more convenient for names than numbers. Now, how would it be if only one person were at work in the apiary? Well, suppose he's at work at No. 49, and wants to get a frame of brood and bees from No. 2. Unless he marks No. 49 in some way when he goes to No. 2, he is liable to make a mistake and get the wrong colony when he comes back.

But if there were no other reason for it, I should want them numbered in order that a record might be kept. You know when children dispute with regard to their ages they are always referred to the family Bible. Well, when we want to be sure of our queens' ages we refer to the record-book.

Suppose I go to a colony and find that it is queenless. Is the record-book now of any use to me? Of course, it is. I can take the book and look and see if there is any colony I can go to for queen-cells, tell how ripe they are, tell whether it's a colony I want to breed from, whether it's gentle or cross, whether they are good workers or not; in fact, tell all about them.

With a record-book you can sit down and map out your day's work and know just what you're going to do beforehand. In fact, I don't see how any one can get along without one. If we should forget ours when we go to the out-apiaries we should have to go back after it, and it would be a difficult thing to keep a record-book without having your colonies numbered.

Marengo, Ill., Dec. 12.

[I think we shall all have to accept this fact, that, if a record-book is used, hive-numbering is a necessity.]

Yes, it is indeed true that the book enables one to plan out the work in the apiary beforehand, and while at work in the yard it may save many steps. Suppose I want a certain kind of queen with which to fill an order. Instead of walking from one hive to another, in-

specting the records on the hives, I could sit in the shade and turn the leaves over; and when the desired queen was found, or queen-cells of the right age, we will say, I go direct to the hive bearing the number designated. And then, again, it is interesting to go over the record-book quietly in the house. Sometimes we would find something seriously needing attention: and, again, we run across some interesting facts, as shown by the record routine work. This was forcibly brought to my mind when Dr. Miller read over to me page after page of his record-book one evening at his house.—Ed.]



ABOUT BEE-CAVES.

Question.—I wish to build a winter repository for my bees. There is a clay bank or hill near my bee-yard. If I build a house, walled with stone, in that bank, 24 to 30 feet long, 10 feet wide and 7 feet high, the front end of which will be out of ground considerably, will it be too damp for the bees?

Answer.—No, not if well drained, and probably it would not be too damp if not drained at all, only so that the water might not come up about the hives, should a sudden freshet occur during the winter. If I am right, none of the bee fraternity have positively proven that dampness is injurious to bees. Let me ask a question: Is not a damp cellar the best to winter bees in? A moist air is promotive of health in our houses—why not in bee-cellars? I believe dampness in winter repositories is one of the agencies in causing bee-diarrrhea, only when the temperature is so low as to condense the vapor on the inside of the hives and combs. It would be well to consider the difference in effect on animal life, between a warm damp atmosphere and a cool damp one, in all our talk in the matter of cellar wintering. But, unless that front end of the cellar is well covered with earth I should fear too low a temperature during cold spells in winter. I should be much more concerned to have the temperature entirely in my control, than about dampness. Give me a cellar that will not vary from 45°, and good stores, and I have little fear as to how the bees will come out in the spring. This I say after many years of successful cellar wintering, and after watching others who have invariably wintered their bees well also. After you have your cellar built, cover the front end over with from three to four feet of earth, and over the whole put a roof so that the dirt may be kept dry at all times of the year, and I think you will find you have something that will be a joy to you for years to come, no matter whether you have two hundred colonies, or twenty to winter therein. The deeper you go into the ground, the more even will the temper-

ature be likely to keep; and the more even the temperature, if it is as high as 45° or above, the more successfully will the bees winter. I have used successfully a cellar very similar to what you speak of, for 20 years, with the exception of one winter when I used an oil-stove in it, when I lost heavily through the poisonous vapor given off into the room by this stove.

HOW MANY QUEENS FROM A NUCLEUS.

Question.—I am thinking some of going into the queen-rearing business next year, and should like to have you tell us in GLEANINGS how many queens can be sold from one nucleus colony in one month. By doing so you will help me to decide how many nucleus hives to make this winter.

Answer.—Very much depends on the weather, the loss of queens when going out to meet the drones (more being lost some seasons than others), and whether you hatch your queens in a lamp-nursery, or insert nearly mature queen-cells in your nucleus. If you practice the latter method, and are successful with it, you might succeed in sending off three queens a month from each nucleus. But introducing queens two or three days old from an incubator has proven an unsafe method with me, and one that causes more labor and worry than the time gained would compensate for; although some are still claiming that they have good success with this plan. By using the cell-plan, and having a system perfect enough so that the queen may emerge from the cell within twelve hours after being given to the nucleus, you will usually have a laying queen in said nucleus in ten days from time of giving the cell. Then in order to have your nucleus hold its own as to bees, this queen should be allowed to lay four or five days before sending her off; for if the queen is taken away when the combs contain only her eggs, the bees will often devour the most of them; when if a part have hatched into larvae, all will be preserved; and in this case our nucleus is strengthened in bees according as the queen lays eggs. Again, as hinted at above, some seasons many queens are lost on their wedding-trip, and others balled after returning therefrom, till they die, or are valueless, either for sending off or for home use; any or all of which makes the matter of any certain number of queens, from any nucleus, in any certain time, very uncertain. My average number from a nucleus, during the past ten years, has been about two a month. Some nuclei do better, others not as well, so that it is always well to calculate on having a few more nuclei than you really expect you will need to fill all orders; and even then, if your case proves anything like mine you will be obliged to return money for some unfilled orders at the end of the season.

BLACK AND ITALIAN BEES.

Question.—Last summer I had a colony that gave well-marked Italian bees in the same hive

with blacks, or nearly blacks, when the brood was all from the same queen. Why was this so?

Answer.—If you had told whether you had one colony or one hundred, or if you had Italians and blacks in the same yard, standing near each other, an intelligent answer could have been more easily given. If you had a pure German colony and an Italian colony standing side by side, it would be nothing at all unusual for you to find things as you state; for young bees, when out for an airing, often mix, where hives stand close together. If this is not the right solution to the problem, then I should calculate that your black or German queen mated with an Italian drone, so that she produced what is known as hybrid bees; and I judge this latter is the real truth in the case. Where a German queen mates with an Italian drone, many of her bees look like good Italians, many like blacks, and the majority are a mixture of the two as to markings.



I had been invited, by the committee of the Woman's Congress of the Cotton States Exposition, to deliver at the Assembly Hall of the Woman's Building an essay on bee culture for women, which I did; and illustrated, by means of charts, the fertilization of flowers. At the close we had a pleasant "conversazione" relative to bees and honey-plants.

While at the exposition at Atlanta I kept a sharp lookout to see what advancement the Cotton States had made in bee culture. On entering the Georgia Building I saw a creditable exhibit of honey and supplies, by Dr. Brown, of Augusta. In the Negro Building was a small but neat case of comb honey from Alabama. In the West Florida exhibit, Alderman & Roberts, of Wewahitchka, had bees, comb, and extracted honey, bearing its trademark of "Orange Bloom." In the Plant Building was a case of several varieties of comb honey of a peculiar whiteness, from Manatee Co. I also saw bales of alfalfa, which promises much to the bee culturists of Florida.

At St. Andrews Bay, the past season, the honey-flow was a failure, owing to an unprecedented fall of rain during the early bloom. When it stopped it was followed by a severe and protracted drouth.

A lady told me to-day, that, while stopping this fall at Pensacola, she wanted honey to cure a cold, and inquired for it at groceries and drugstores, but failed to find any.

MRS. L. HARRISON.

St. Andrews, Fla., Dec. 25.

HOW LANGSTROTH WAS ESTEEMED IN RUSSIA.

The following will explain itself:

Mr. A. I. Root.—The Russian Society of Apiculture has received the sad news of the death of father L. L. Langstroth, the most eminent bee-keeper of the century. The members of our society know that the American bee-keepers, as brothers of a large family, have done their best to gladden the last days of their leader, and that your journal was a distributing center of the gifts to him.

At the meeting on the 10th of December the undersigned bee-keepers, members of the Russian Society of Apiculture, collected the sum of 53 rubles (\$26.90), and have asked me, as the chief editor of the *Journal of the Russian Society of Apiculture*, to send to you this sum, and to beg you to be so kind as to forward it to the remaining family of Mr. Langstroth. May the check inclosed be at least a faint indication of the friendship between the Russian and American bee-keepers.

All the members present express their sincere regards to the memory of the great bee-keeper, and their honorable respect to his family.

I give here the list of names of the bee-keepers who were present at the meeting of Dec. 10, and who have made donations:

Belewich, Nasilof, L. Glasenapp, S. Glasenapp, Maloff, Philosophff, Nikiforoff, Alferoff, Goni, Pentkowsky, Staritzky, Molewsky-Molewich, Owsniannikoff, Pocrowsky, Glagolewa, Shipmanoff, Aglenko, Kasin, Tomiloff, Mendel, Pelesky, Tezofimoff.

I am, sir, very truly yours,

PROF. S. GLASENAPP.

University of St. Petersburg, Russia.

[I am sure our American bee-keepers will greatly appreciate this honor. We take pleasure in forwarding the amount to Mrs. Cowan, the daughter of Mr. Langstroth, at Dayton.—ED.]

THOSE RAMBLER ARTICLES.

You ask for opinions about a cessation of Rambler's articles. Perhaps as records of travel they had; for good as they have been, people will tire. Notwithstanding, I freely express my appreciation of them as having been intellectually vigorous, well illustrated, geographically instructive, having wholesome humor without loss of respectability, and, withal, having a good moral pointing, calculated to inspire both old and young. And as to the future say: Rambler, knowing what he does about the practical side of apiculture, admitting that his growing apiary demands more attention, might be expected to give readers of GLEANINGS first-class items warm from the workman's hand and brain. Of all the heretofore regular contributors, I fancy that Rambler's new articles, fresh from actual bee-work of his own, would be read more eagerly than any others, unless those of Mr. Doolittle and Dr. Miller are excepted.

T. C. POTTER.

Indianapolis, Ind., Dec. 28.

[The foregoing is a fair sample of the many indorsements we have received for those articles of travel from the Rambler. He will continue to write as formerly. The Echoes will appear as usual, and then there will be another department conducted by him soon.—ED.]

**BEE-PARALYSIS IS TRANSMITTED BY QUEEN;
BLACKS NOT PROOF AGAINST IT.**

Among my 47 colonies I have about 4 that show symptoms of paralysis. One of the four is a colony built up from a nucleus purchased from Mrs. Atchley last spring. I placed the hive 30 yards from the apiary, in the hope that it would not contract the disease; but, sure enough, they got it—probably through robbing. This is another proof of the contagious character of the malady.

I note the conclusion at Atlanta as to the disease not being transmitted through the queen. This is a mistake. It got into my brother's apiary through a queen which I gave him. There is another popular error. The blacks have it just like the Italians.

I know that there are queen-breeders who have bee-paralysis in their apiaries. It would be to the interest of such to disseminate the idea that queens do not communicate the infection. It is to be hoped that no such notion would influence any one. It is an indisputable fact that an infected queen will infect a colony, from which the disease may spread to a whole apiary. I have seen the whole process.

Columbia, Miss., Dec. 26. T. S. FORD.

[Mr. Ford has probably had more experience with bee-paralysis than any other man in the country. I insert this at this time because it refutes some late popular notions.—ED.]

**MORE PROOF SHOWING THAT OLD FOUNDATION
IS AS GOOD AS NEW.**

Mr. Editor:—Since you wish further information from bee-keepers who have used old and new comb foundation, I will add my experience. I procured my first foundation from John Long, who first placed it on the market. I purchased one pound of him at a cost of one dollar. This was bleached white, and was hard and brittle, but looked nice; but on trial it proved useless, or worse than that, as the bees tore it down and removed it from the hive, building new comb in its place. After this, foundation was next made from wax unbleached, and it proved a grand success. During all these years I have used it as made, with good results, and have had at the close of each season more or less to carry over in the honey-boxes and brood-frames undrawn, or as I placed it in the boxes or brood frames. I have stored the cases so that the light could not strike on the foundation, and it has at all times been readily accepted by the bees—as much so as that recently from the mill or press. As the older bee-keepers well know, many bought mills and made their own foundation, with

little or no knowledge as to cleansing wax, its purity, or its proper manipulation; and it would not have been surprising if some had been made that the bees would not accept. I tested a few pounds at different times, made by such, and it did not at all compare with that sent out by those who understood the business almost perfectly. I never attempted to make foundation, as I thought it much better to buy of reliable parties who knew how to make a No. 1 article, and I think I have been well repaid for doing so, rather than attempt it myself. Foundation should at all times be kept in the dark, as light injures its value. I have kept it three or four years as good as new.

Milledgeville, Ill., Dec. 14. F. A. SNELL.

**THE SITUATION IN CUBA SO FAR AS HONEY IS
CONCERNED.**

The war, which broke out in this island last February, has made bee culture or honey-raising next to impossible in our country places; so, after getting ready to work I was compelled to give up my intention, and must wait to see what all this will come to. The honey crop on the island will be small indeed, not only because the bees are not duly cared for, but because honey is used freely by the contending parties to sweeten their existence.

ALCIDES BETANCOURT.

Puerto Principe, Cuba.

BURNING OR WATER-SOAKING WAX.

I have been trying to refine wax in a barrel with steam from a high-pressure boiler, one-fourth full of water. I never dreamed that you could burn wax that way with the cover lightly on the barrel. I have wasted the most of my wax, beautiful uncappings among it, too. When I found out my mistake I hunted my A B C for something warning us against burning with steam, but could not find any thing about burning except putting wax itself on a bare fire. It may be mentioned; but if not, a word of warning to those who don't know any better than I did might save worry and expense. It may not be from burning; but the wax is spoiled at any rate. JOHN ALLEN.

Newboro, Oamaru, N. Z.

[While it is true you can burn wax with direct steam, or live steam, you can hardly do so by sending that steam into water and transmitting the heat indirectly from the water to the wax. Wax will never burn when over water, because it can never get hotter than the boiling-point. The trouble with your wax is probably not burning, as you suppose, but water-soaking the wax. While in this condition it is quite spongy, and appears as if it had been ground up into meal. When a handful of it is grabbed up it can be pressed together, and the water can be squeezed out as from a sponge. The only way of restoring such wax is to subject it to a dry heat, where the water can pass off. The solar wax-extractors are the best means of rendering such wax back to its cake form. Trays of such wax placed in the stove oven will also dry it out.—ED.]



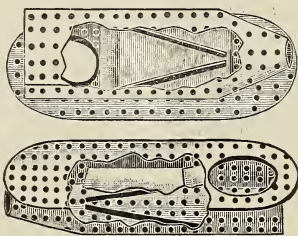
THE PORTER SPRING ESCAPE

FOR HONEY-ROOM WINDOWS.

By R. & E. C. Porter.

Having quite a quantity of honey to extract during the excessively hot weather of last September, when no nectar was to be had and robbing was at its worst, and knowing too well how ineffective cone escapes used on extracting-room windows or escapes, made by extending the screen wire to a considerable extent above them with a bee-space between it and the sides of the building were for excluding robbers at such a time, to enable us to get through with the work without annoyance we made, for this purpose, the escape shown in the accompanying illustration. This escape is a modification of the well known form of the Porter spring escape, now so extensively used for freeing the surplus honey from bees automatically before removal from the hives, the principle used being the same. It differs from that only in the details of construction necessary to adapt it to this particular use.

The top, or oval part, is perforated along the edges, so that the escape may be readily tacked to the casing or window-frame. The body is made of perforated tin, to admit light; and its open end is extended into a cone to prevent robbers crawling in at the sides of the springs and interfering with the bees passing out, which would occur if it were left open full width. As compared with the other form, the



interior part is reversed in position; the springs used are somewhat broader, and set slightly more open.

The method of applying these escapes to the window is almost too apparent to require explanation. Merely make $\frac{1}{2}$ or $\frac{3}{4}$ inch holes through the screen wire at its upper corners; or, in case it is desirable to make holes without injury to the wire cloth, thus leaving it so that it can be replaced when the escapes are removed, if desired, remove the tacks from the corners and turn them down till triangular holes of corresponding size are formed, and then tack the escapes in a vertical position over these

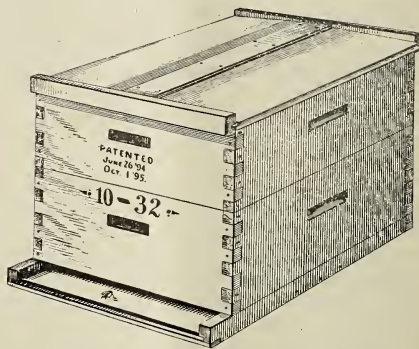
openings so that the bees can pass through them into the escapes. In case the window is provided with an escape made by extending the wire cloth above it, close the bee-space with a strip flush with the top of the window, and proceed as before. If escapes are not to be used on all the windows of the honey-room, preference should be given to those opening to the south or west, so that, on cold days, the bees may have the benefit of the afternoon sun.

After putting these escapes to the severest possible test under the most trying conditions, we have found them to meet all the requirements of a perfect device for this purpose. Since using them we realize as never before how many of the disagreeable features of bee-keeping are removed, and how much pleasure and satisfaction are added to the pursuit by having all windows of honey and extracting rooms supplied with escapes through which all bees that get in when doors are being opened or closed, or in any of the other ways, these persistent little insects have of effecting this end, can pass out easily and rapidly, and not a single robber can enter.

While this form of escape was made primarily for our own convenience, yet our experience with it so impressed us with its value and usefulness to bee-keepers, that we have arranged to make it for the trade. It will be sold through The A. I. Root Co.

Lewistown, Ill., Nov. 15.

DANZENBAKER'S 10-32 HIVE.



COMPLETE READY FOR A SWARM.

Consists of 10 brood-frames, $15\frac{1}{2} \times 6\frac{1}{2}$ inches net comb surface; 32 sections $5 \times 3\frac{1}{2}$, 7 to the foot, supported in the case on 8 section-holders; the title signifying what constitutes a complete hive as used with a swarm. They have square edges fitting tightly together for tiering up, and extra bodies or supers may be used where conditions require it; but for average yields and localities this form will give the best results in comb honey, with good queens to crowd it with brood, and force the bees to store the honey in the sections.

The hives are made by The A. I. Root Co., with machinery specially adapted for the purpose of dovetailing, with smooth, accurately square cuts that come together true and square

to stay so; can not be excelled anywhere, and, if well painted, will last a lifetime.

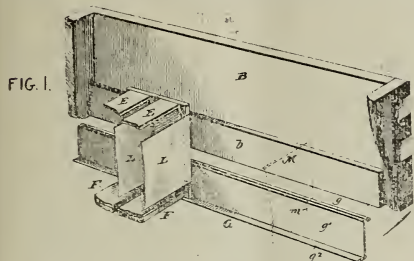


Fig. 1 shows the end of case, *B*, with the cleat *b* fastened to its lower edge to support the metal hanger *G*, having oppositely folded edges *g, g*, to keep it straight and true when its upper edge is hung upon the cleat *b*, and its lower edge is supporting the bottom-bars *F, F*, of the frames or section-holders, and sections *E, E*. *L* shows paraffine-paper separators secured to the end-bars of section-holders. *M* shows wooden separators notched at *m*, to rest on top of the flange of the metal hanger. Paraffine paper is also covered over the sections, and stuck down close and smooth, to obviate the necessity of the bees gathering propolis and soiling the sections.

FIG. 2.

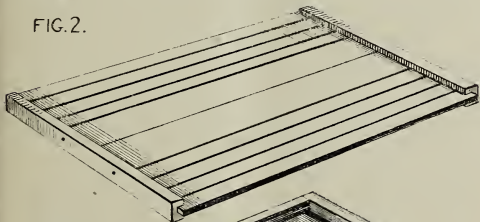


FIG. 3.

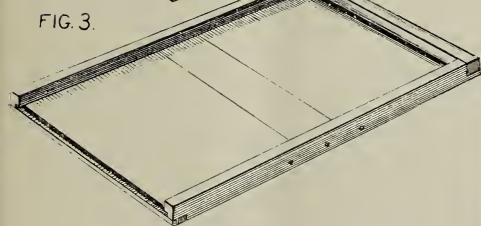


Fig. 2 shows the inside of a Higginsville cover as made for this hive, with eight scores half through its thickness, which keeps it as straight and true as a pane of glass, when nailed through the cleats *ONLY* where the holes are pierced, which allows the two boards of the cover to expand or contract in the grooves without twisting or cracking. It combines together the advantages of a flat and gable cover, without a nook for wasps or spiders. When painted outside, and coated with paraffine on the inside, it is the cleanest, lightest, and best cover out, and can be made absolutely storm-proof by fastening a sheet of paraffine paper with a warm iron, smooth on the inside of the cover, extending slightly beyond the edges, to turn down over the top edge of the hive, so that no water can pass into the joint under the cover, which extends $\frac{1}{2}$ inch over the sides of the hive.

Fig. 3 is a light strong-framed hive-bottom, with grooved side-rails to hold the three thin boards true and straight, when nailed at their inner edges *ONLY*, as the holes are pierced, which allows for expansion and contraction

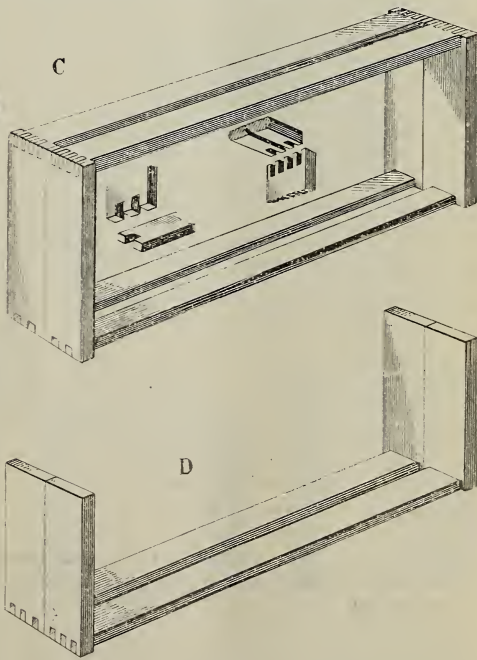
freely in the grooves by the thin bottom over the end-cleats, so that it will not twist or split. The grooves are spaced to form a $\frac{1}{4}$ -inch bee-space on one side, or a full $\frac{1}{4}$ on the other, as occasion requires, by reversing the bottom. The side rails keep the bottom clear, that air may circulate freely beneath it, so that it is always dry, and affords no harbor for ants.

Closed end brood-frames ARE NOT a recent invention. They are time-tried and proven. It would be a gross imposition on the public to claim the exclusive right to use them.

Moses Quinby, the veteran of original investigators in his generation, in his "Mysteries of Bee-keeping," advocated, if he did not invent, the closed-end brood-frame. His biographer says, "Mr. Quinby quickly observed that bees did not winter as well in the L. hives (hanging frames) as in box hives, on account of the spaces at the ends of the frames, and set about to remedy it by making a closed-end frame."

Loose hanging frames, with currents of cold air around the ends of the combs, destroy thousands of colonies in winter and spring by chilling the bees and brood until they perish, or are reduced in numbers so as to be utterly worthless. One extra-strong colony will produce more surplus in a short honey flow or a poor season than ten weak ones, and are the only ones that pay at all.

That all may know at all times which is top or bottom of the brood-frames, they are made with wide thick beveled grooved top-bars, to receive foundation starters, which are held securely in place by pressing to the sharp side of the beveled edge, and filling, with glue or melted beeswax on the opposite side, so that they can not be dragged down by the weight of a new swarm. Starters half an inch wide are safest and best, securing straighter combs, as they can not twist or bulge out of shape.



[FIG. 4.]

[C] shows the narrow bottom-bars of the brood-frames, affording space to note the con-

dition of a colony from the bottom, without disturbing cover or super, by raising the hive partially from the bottom on its end. It also shows how the frames stand closed together, forming a close solid wall of themselves inside the hive.

D shows the section-holders, originated by The A. I. Root Co. They are just the best possible to use with these open-cornered sections, as they also form a complete inner wall within the super, checking the rapid radiation of bee-heat, enabling the bees to fill out to the wood the outside edge of the end sections. They will be made for this hive, dovetailed, the same as the brood-frames, by The A. I. Root Co., with special machinery, making smooth square cuts that fit true and square, standing straight and strong, *securing nice accuracy in BEE-SPACES*, by which the queen is practically deterred from entering the supers, without use or need of honey-boards or queen-excluders of any kind.

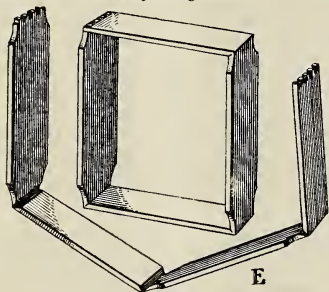
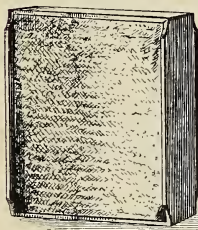


FIG. 5.

E shows the Prize sections, originated and still used (in four pieces dovetailed) by Capt. J. E. Hetherington, of Cherry Valley, N. Y., who is, doubtless, the largest owner of bees (having thousands of colonies), and the most successful producer of comb honey in the world, who is able to sell his crop direct to the trade without need of commission dealers or middlemen, and always get the best prices too, and never has any left over. Some of the best grocers in Washington, who have had honey of me this year, want me to furnish them all they will need next year. It is pleasant to feel sure, and know that the best grocers in that city are ready to take the honey I may raise. One morning I sold in the market 385 lbs., while another man within three steps of me sold only 23 $4\frac{1}{4}$ sections; and another man, 20 steps away, sold but 41 $4\frac{1}{4}$ sections. Their honey was as white as mine. They attended market regularly, and had their customers, while it was my only day in market. Their form and appearance of the sections made all the difference in their sale over the $4\frac{1}{4}$ sections.

5 x 3 $\frac{1}{2}$ in.



4 $\frac{1}{4}$ x 4 $\frac{1}{4}$ in.



FIG. 6.

I have improved them by cutting away the naughty corners so that they can be made in

one piece, and yet glass-ed, the same as four-piece sections, and the bees fill them out better in the corners (where they leave openings to pass through the standard $4\frac{1}{4}$ sections), as these cut-away corners permit them to pass through to the next tier of sections as if it were a single comb.

Fig. 6 shows a fac-simile of the Prize section filled with honey; also a $4\frac{1}{4}$ section. Both weighed the same, yet the proportions of the Prize section, with its deeper side, built out better to the wood, certainly appears to be better weight. In fact, that question is rarely asked, while parties are freely asking if the $4\frac{1}{4}$ sections are full weight. It is *more pleasing to eyes accustomed* to look through tall windows and tall glass in them, or into tall mirrors, or at the tall doors they pass through to see the tall grain and trees on every hand, and the tall men and women who alone are called stately and grand. As Capt. Hetherington, who designed it, and is himself a tall man, aptly says, the *great majority of humanity admire tall things*—the tall horse above the ox; the mountain more than the meadow. We light our finest churches with the tallest windows, and adorn them with the tallest steeples. Practically it is more economical in space, as 32 of them require but little more hive surface than 24 $4\frac{1}{4}$ sections. The bees enter them more readily, having a deeper space to cluster to keep up the necessary heat.

Mr. C. D. Duvall, a prominent queen-breeder of Spencerville, Md., says he had a case of 32 of these tall sections on a hive, and a case of 24 of the $4\frac{1}{4}$ sections on an adjoining hive, *equally strong*, both put on and taken off at the same time; 18 of the tall sections were finished out of the 32, while only 8 of the 24 $4\frac{1}{4}$ sections were filled. The 18 tall sections were worth 20 cents each, or \$3.60; the 8 $4\frac{1}{4}$ ones (2 cents less), 18 cents each, or \$1.44. Difference, \$2.16, which is more than enough to pay for a hive. He says he has used the Root hives 15 years, but my hive is far ahead of any he ever saw for comb honey, and he will discard all other arrangements as soon as possible.

Mr. S. D. Matthews, of Hamilton, N. C., bought the last of May (late for his locality), three of my 1894 hives with these tall sections. June 10 he says: "The bees are working nicely in the sections of all your hives. I got one of Heddon's hives at the same time as yours, but there is nothing in the sections yet." Later Mr. Matthews sent me 288 lbs. of the tall sections, saying he liked my hive much the best, and wanted 100 hives for next year. He is a stranger to me, and never saw my hive before he bought it.

Mr. S. D. Matthews writes me at Atlanta:

*** "I should be glad indeed to go to Atlanta, more especially to see you and your new hive. ** I hope you will succeed with it, as I am sure it merits success. ** I have three apiaries, 180 hives, bees in 20 Simplicities, 2 Langstroth, 150 Dovetailed, 1 Heddon, 3 Danzenbaker hives. I have used the Simplicities and Dovetailed 5 years; Heddon and Danzenbaker one season. As soon as I can I want to transfer them all into the Danzenbaker hives. The sections and their arrangement just gets ahead of any hive I ever saw, and I saw lots of them at the Chicago World's Fair."

S. D. MATTHEWS.

Mr. Robt. Wine, of Markham, Va., says he hived all his largest first swarms in Root hives, and did not get a section of honey from them; but he put second swarms into three of my hives. Each made 32 sections of nice honey—

96 sections at wholesale price, 15 cts., \$11.40—enough to pay for eight hives in the flat, while the other hives earned nothing. He says: "Hereafter I shall use only your hives."

Mr. J. F. Stock, of Kensington, Md., says, Aug. 8: "These tall sections, so nicely filled solid to the wood, are more than a 'square chunk' of honey; they are handsome, exquisitely beautiful."

Mr. Hiram Johnson, of Washington, D. C., who still owns his Michigan farm where for 35 years he kept from 100 to 175 colonies of bees, and brought to Washington 20 L. and chaff hives, last season bought six of my hives. He says one of them yielded 92 nice sections, which sold with the colony and hive, netting him \$20.90 on the first outlay for him of \$2.50. "These tall open-cornered sections are filled nicely to the wood much better than my 4¼ sections. They are the choicest of my honey, which I gave to my friends, all made in your hives, and packed in the half-dozen D. shipping-cases."

Hon. J. Sterling Morton, Secretary of Agriculture, of Washington, D. C., to whom Mr. Johnson gave two cases, was so highly pleased with its appearance that he sent one of them to Mrs. Cleveland, at Gray Gables, Buzzards Bay, Mass. He considered it fit to present to the first lady in the land, and he received a very pleasant acknowledgement from Mrs. Cleveland, saying:

"The honey is delicious, and the industry of the bees is equalled only by your thoughtful kindness. We are enjoying the honey immensely, and the children thank you as heartily as I do."

FRANCES F. CLEVELAND.

Hon. Chas. W. Dabney, Assistant Sec'y of Agriculture, also wrote Mr. Johnson:

"That is the prettiest honey, packed in the prettiest fashion, I ever saw. I shall take it to my wife, and I know it will delight her."

One of these hives yielded 92 nice sections, and Mr. Johnson sold it so as to net \$20.90 over cost for colony and honey, on an outlay of \$2.50.

Mr. J. Edward Turton, Washington, D. C., says:

"I sell my honey in these tall sections at 20 cts., while 4¼ sections are selling at 15 cts. in market. My hives have made 40 to 60 sections each this very poor season, while a friend of mine has only 125 4¼ sections from 25 L. hives."

Mr. Henry Simpers, of Paris, Va., writes:

"I get twice as many of these tall sections from your hives as I do of the 4¼ sections from my Root hives. They are the finest I ever saw. I have sold them all in the yard for 13 cts. per lb. The same parties would not take the 4¼ sections at 10 cts."

Fig. 7 is a sectional view of the hive with two stories for brood-nest, about 2000 cubic inches, as used in spring to build up when a hive is crowded with bees before it is time to put on sections for white honey.

Four filled sections are shown within a section-holder in place in super, and brood-frames also of the same length, showing the thickness of the ends of the same, and the ends of the hive-cases; also the position of the cleats and hangers, with the air-space at the ends; which shields the inner hive from direct effects of heat or cold, helping to retain the heat of the colony needed to hatch the eggs, rear the brood, to mold the wax, to ripen and seal the honey.

This air-space also, with the openings through the hanger-cleats, forms a perfect but inexpensive bee-escape, with each case or super, that can not be lost, strayed, stolen, nor clogged,

and WILL NOT get out of order. All the care needed is to close it up when not used; it is FREE OF COST as a part of the hive; while other bee-escapes, with the board to care for, cost 35 cts. for a single one.

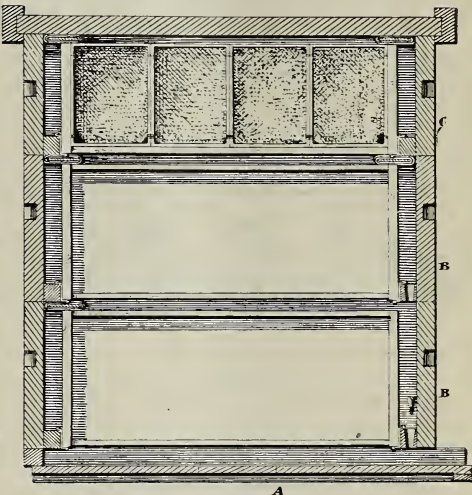


FIG. 7.

To clear an upper case of bees, open the hole in the cleat in the lower case; spread a wet piece of burlap over the frames, even with the edge of the air space, and place a strip of wood to keep it down. Set the super back in place ¼ inch to the front, so that each bee-space between the bottom-bars opens over the air-space. In a few hours the bees will all pass down, attracted by the light and air over the entrance below, when the super can be taken off without

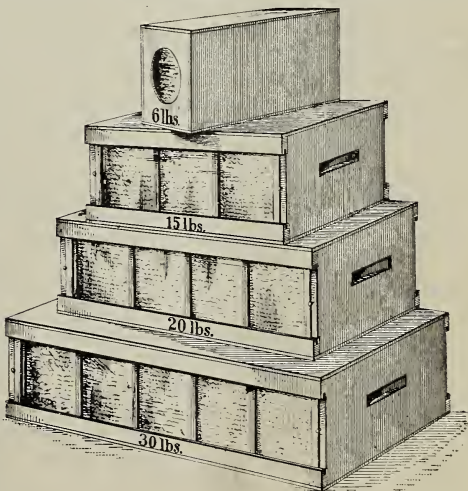


FIG. 8.

disturbing a bee. To the beginner it is almost indispensable, while it is an immense saving of time and worry with an expert.

These air-spaces afford slack in the fitting of inside fixtures, so that nothing gets stuck by dampness and affords ample space for handling the standing frames two or three at once, as

easily as can be done with any hanging frame; there are no rabbits cut in the hive, nor corners for the bees to daub with propolis; it is practically a double walled hive without extra cost or weight, or in any way changing the outward symmetry of the hive.

All parts of these fixtures are designed to be used in any L. hive $14\frac{1}{4}$ or $14\frac{1}{2}$ wide; as they are supported from the lower edge, the extra depth will afford space for top packing, so that thousands of old hives can be fitted up to use these sections, at a trifling cost.



SIXTEEN extra pages again.

"ARE you on the beef diet yet?" Yes, sir, both of us, and we expect to keep on it so long as we keep on improving.

I SHOULD be glad to receive suggestions as to proper subjects for symposiums that may occur during the year, in our columns. Several have been already proposed, and I should prefer to make a selection from a large list, and take as practical questions as may be—something the discussion of which will lead to real practical results.

THE date of the meeting of the Ontario Bee-keepers' Association is Jan. 16th and 17th, at Brantford, Ont. I had intended to be present at this meeting; but it follows too closely on the heels of the convention which takes place in Chicago this week on the 10th and 11th. I can not very well get home, catch up with my work, and attend the other convention, in Canada.

OBJECTION has been made by some of our subscribers to the very glossy paper upon which GLEANINGS has been printed for two or three months. By a mistake, the paper-mill sent us a paper more glossy than we ordered, and we decided to let the matter go. We shall be using now, shortly, from the next car of paper, some that will be entirely free from this objectionable glare. We always desire to print GLEANINGS on the very best of paper—that which will bring out the half-tones well, and give a general pleasing effect to the printed page.

SOMNAMBULIST, in the *Progressive Bee keeper*, after commenting on the naughty way that some people have been treating him, winds up in this philosophical way: "Young man, you can't quarrel with me, for I have learned the art of *never being hurt when hit*, as I find my fellow-creatures seldom hit those they can not hurt." The italics are mine. The possession of such an art is a valuable one indeed; and if we do not all of us have it, I believe it can be

acquired. I am not very often hit; but when I am hit unjustly by a friend it hurts. When I am hit by an enemy, I am like the proverbial duck, and the drops of water.

BRO. HUTCHINSON has been passing through deep waters. The serious illness of his daughter Ivy has absorbed a good deal of his time of late, from the *Review*, and he begs the indulgence of his readers. I am sure he need make no such apology, for both the numbers that were issued during her sickness have been quite up to the former standard of excellence. We have been having serious illness at our house, and for a few days we were fearful that the worst might come. Mrs. A. I. R., wife, mother, grandma, and aunt, of Rootville, and one who has ministered to us all so faithfully when we were sick, in the years that have gone by, was the one this time to be stricken down. She seems to be, at the present writing, out of danger, and all Rootville, from the last baby to grandpa, is rejoicing.

BEE-STING POISON, AND ITS EFFECTS ON THE HUMAN SYSTEM.

A SUBSCRIBER wants to know if bee-sting poison injected into the system in the ordinary routine work in the apiary, year after year, will not in time result in some chronic trouble in the system. I know of hundreds of bee-keepers (and perhaps it is safe to say they have been stung thousands of times), who yet seem to be none the worse for "*Apis mellifica*," as the bee-sting poison is sometimes called. On the other hand, there have appeared a few, a very few cases where the subject *seemed* to be unfavorably affected; but even in these, the ills and ailments of the human body are so numerous and complicated that it is not altogether clear that the poison of the bee had any thing to do with the trouble in the exceptions noted.

CALIFORNIA HONEY NOT ADULTERATED, AND WHY.

A FEW issues ago Mr. Dayton made statements to the effect that a large portion of California honey was adulterated. Rambler and Prof. Cook say that the best extracted sells in California at 3 cts. It looks as though there could be no adulterating honey with glucose, in California at least, especially after paying freight on the inferior article manufactured in the East. If there is any adulteration practiced at all, the California honey would be shipped east; then the price would be raised high enough by the freight, after the honey has got into the glucose regions, to make glucosing possibly profitable. GLEANINGS does not wish to ever conceal the facts about glucosing—that is, to try to carry the idea that it is not adulterated when it may be; but when the probabilities are the other way, it will use all its influence to show that the honey is pure.

APICULTURAL NOMENCLATURE.

I AM glad to see the disposition on the part of bee-keepers to use shorter terms in designating various articles and operations in the apiary. Dr. Miller, in the *American Bee Journal*, in place of the circumlocution of saying "carrying bees into the cellar" would "cellar them." He does not say what term he would use when he would take them out; but reasoning from analogy he would probably "uncellar" them. Perhaps this would be carrying matters a little too far.

So far the new nomenclature includes the word "cellar," as a verb—to put bees into the cellar; "queen and unqueen" for "supplying a colony with a queen and taking one away;" "floor" instead of "bottom-board;" "queen-bar" instead of queen-excluding honey-board." I am not sure that the substitutes for the two last terms are sufficiently descriptive to be readily understood. I shall be glad to receive a list of short words that are perfectly plain as to their meaning, in place of the longer circumlocutions we are now using. By the way, in York State I heard the bee-keepers using the term "boxing a colony," instead of the longer term, "putting sections on a colony." They almost invariably used the term "boxes" instead of "sections." In the West I have heard the expression "supering" for putting on sections or extracting-supers.

HORLECK'S MILK; THE SUGGESTION OF LANGSTROTH.

SINCE the publication of the letter from our lamented Langstroth, referring to the similarity of milk and hot honey-water to the chyle food given to the larvæ, quite a number sent in inquiries asking what malted milk is and how it is prepared. It is a preparation known as Horleck's malted milk, and can be obtained at any of the drugstores or of the manufacturers, the Horleck Food Co., Racine, Wis. It is a white or cream-colored powder which, on being dissolved in hot water, makes a delicious drink. It is much more easily assimilated than cows' milk, and is especially adapted to children and adults with weak powers of assimilation. Mr. Langstroth, seeing the exact similarity of honey-water and malted milk to the food given to larvæ, recommended that the former be fed to the bees to see if it would not be a powerful stimulus in brood-rearing. I hope the experiment will be tried this coming summer.

Perhaps I might suggest (this is no paid "write-up") that Horleck's milk, besides being very easily assimilated, is a powerful food stimulant. Once or twice I have taken this milk after a long bicycle-run, and have felt its reviving effects almost immediately. Ordinary common cows' milk does not quite "go to the spot" as this does. We keep it in our house

most of the time; and as cows' milk did not seem to agree with our boy, we have given him the Horleck preparation instead, and never with any bad results.

In a previous letter I had received from Mr. Langstroth, he told me he was using it with great benefit. Dr. Miller has also been loud in its praise, and he induced us to begin using it. At his request the manufacturers sent us a sample package, and wished us to try it after a long bicycle-run, or even to use it as a stimulant on those runs. The suggestion was made that a small vial of it be carried in the pocket; and whenever hunger or thirst begin to appear, stop at the first drinking-place and pour a little of the powder in a little water, and drink the mixture.

Perhaps some might think from the adjective "malted" it contains alcohol. It is no more alcoholic than our yeast breads.

RELIABILITY OF COMMISSION HOUSES.

We intend to have only strictly reliable firms quote the price of honey in our Honey Column. If there are any, however, who are not treating our subscribers fairly or with sufficient promptness, we hope they will inform us, giving us the facts. We have "punched up" one old firm lately, and told them that, if they did not answer letters a little more promptly, we should drop them from our list. The point is, we do not wish to have a commission firm, who are careless in their business methods, occupy space in our pages; because, if they are unfair or lacking in promptness with one they will be unfair to new customers who consign them honey for the first time simply because they see their quotations in GLEANINGS.

We are getting all the commission houses to send us an affidavit to the effect that they will neither adulterate honey with glucose or any other inferior sweet, nor will they handle any adulterated honey of any sort if they know it. So far, nearly all have subscribed to the statement. Three or four have not yet responded, but we suppose they will when they get around to it. At all events, the list will be simmered down strictly to those who will agree under affidavit to handle only pure goods.

This was done, not because we doubted the integrity of the honey-men who furnish the quotations so much as because we desired to weed out any who might hesitate to give us the required affidavit. And then, too, it gives them *all* notice what we expect of them. If any of them should be discovered dabbling in honey-adulterations after they had given us their sworn statement, don't you see we should then be in a position to learn what their oath meant in court?

So far as we know, every one of the firms who quote prices for us is reliable and responsible, and deal only in straight goods. I believe

we have weeded out all who have not given entire satisfaction to their customers; but we are quite willing to continue the weeding out a little more if there is any necessity for it, and of course we shall be dependent upon our subscribers for information. We are well aware that there are some bee-keepers whom it is impossible to please, and it doesn't always happen that the commission firm is in the wrong by a long ways.

THE HOME OF THE HONEY-BEES AS IT NOW IS.

SOME time ago I promised to give you a picture showing the recent enlargement to our manufacturing plant; and in this number a bird's-eye view of something similar to what we formerly gave you will be found. The enlargement consists of the addition of a third story to the wood-working building—the brick structure shown at the lower left-hand corner (new railway-switches and platforms not shown).

The first floor of this building, 44 x 96, is devoted to the manufacture of hives and hive parts, and all heavier work; the second floor, to the making of sections, brood-frames, and other small hive furniture. In this room and in the one below will be found something like \$2500 worth of newly built special automatic section-making machinery, all iron. A new automatic machine on the first floor dovetails the planks already cut into lengths, scores out the entranceways, picks them up and carries them upstairs, and hands them to a boy. This boy piles them just back of the gang-saws, where they are ripped up into rough section-strips, six at a time. They are then transferred to a couple of automatic double sanders that sand and polish the strips both sides at once. After they leave these machines they drop down in a heap in even piles, and are then picked up by a workman, and piled into a magazine of another automatic machine that picks them up, V cuts them, and spreads them out so that any "seconds" may be sorted out and put in one box, while those of first quality can be placed in another. These blanks first pass out V side up, and are then turned over by the machine so that the other side of the section can be inspected before they are finally inspected as to grade.

In other parts of the room are different machines for doing different kinds of hive work, which I'll not stop to mention.

The third floor is devoted almost exclusively to hand work—that is, the nailing of hives, frames, boxes, pattern-making, and outside incidental work in connection with the supply business.

One of the recent improvements added to the Home of the Honey-bees is some \$1500 worth of new piping, and two new and larger exhaust-fans to carry away sawdust, especially the fine dust that comes from the sanders in polishing

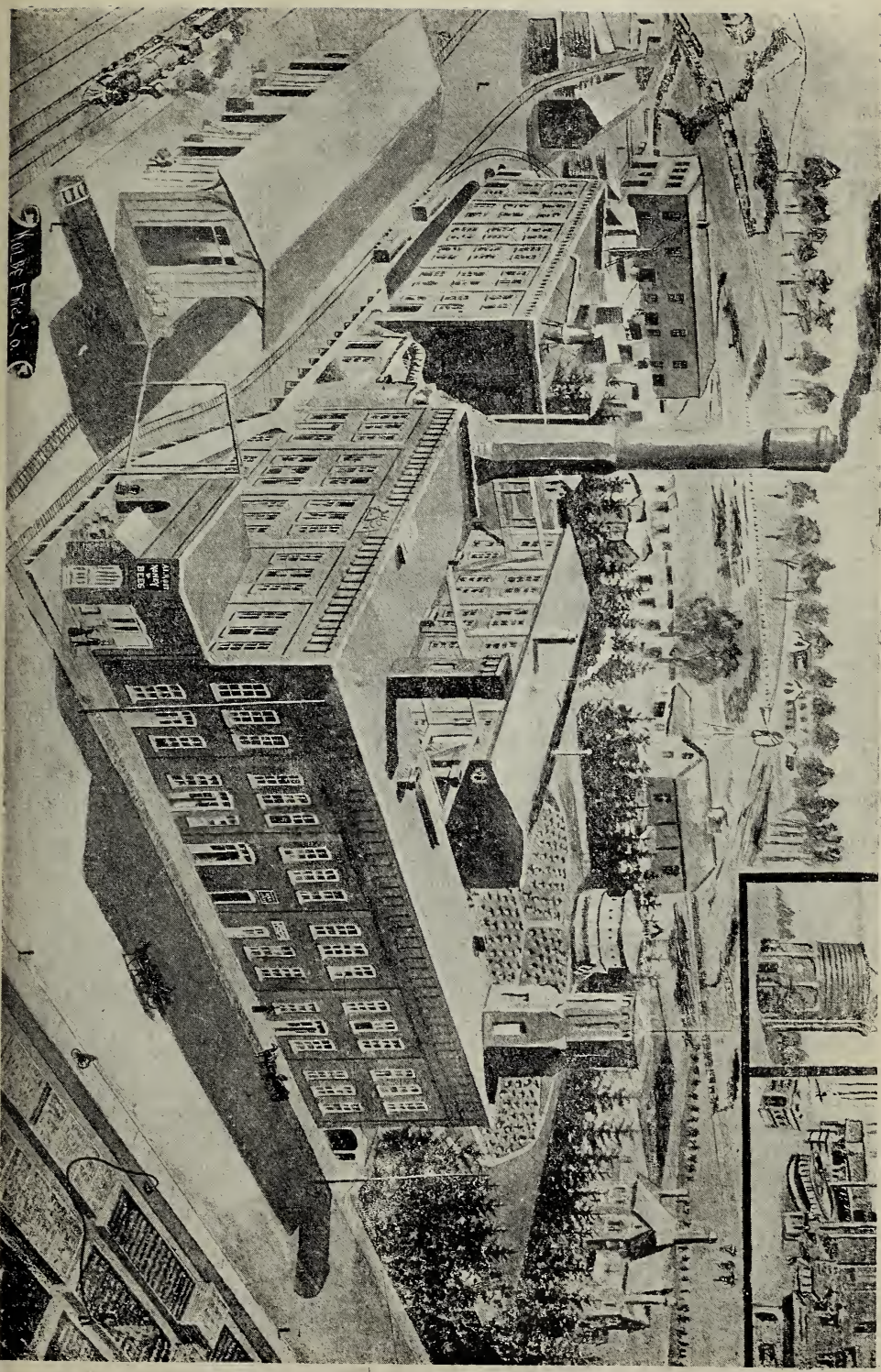
the sections. In order to turn out first-class sanded and polished work it is necessary to have a powerful blast to remove the fine dust in the polishing. In connection with this piping there are two centrifugal dust-separators, one of which is on the boiler-room roof, scarcely visible in the picture, and the other is on the three-story wood-working building. They are large cylinders terminating in an apex at the lower end, some six feet in diameter and fifteen feet high. The dust as it comes from the machines is carried by the piping to these cylinders, and by centrifugal force it is thrown against the sides, allowing the air freed of dust to escape through the center at the top, through a large hood. The dust, as it strikes the sides inside, falls to the apex of the cone at the bottom, and is then forced over to the boiler-furnaces, and fed automatically above the fire, so that a good part of the time there is no shoveling at all.

Another improvement that we have recently put in is what we call our "hog." It is nothing more nor less than a ponderous machine that swallows, as it were, all short refuse edgings, chews them up fine, and then discharges them into one of the pipes connected with one of the large fans. It is then carried by the piping and fed automatically to the boiler-furnaces, the same as sawdust and shavings as they come from the machines. It has been found that wood in a finely pulverized condition will go further as fuel than in any other form. The object of our hog is to reduce all edgings and waste material to a pulverized condition, so that it can be blown by a blast of air right under the boilers.

This same hog is no respecter of persons, dogs, plank, edgings, or any thing else. If an unlucky dog *should* get into its voluminous throat there would be a shower of sausage-meat, in the language of the boys, over in the direction of the boilers. To guard against accidents to human beings, the mouth, to carry out the figure, is muzzled, or protected by a guard.

If you were to visit the Home of the Honey-bees now you would see another novel feature—the making of comb foundation on the new plan, as explained in our last issue, or what we call the Weed process. As I then explained, our wax is sheeted up on bobbins, and then fed from these bobbins into foundation-mills. A pressure of the foot-lever starts the mill going, when the foundation is reeled out, and into a machine that pulls it from the mill and chops it up into lengths just right for brood-frames or sections. Mr. Weed just reported to me that the cut-off machine is not only a perfect success, but is now taking foundation from the section-mill—extra thin, mind you—at the rate of a pound a minute.

In one of our Medina papers, the *Sentinel*, for Oct. 10, 1895, appears a fairly written notice of the A. I. Root Co., and its business, as viewed



W. H. F. & Co.



by an outsider. As it gives some additional particulars I give it here:

THE A. I. ROOT COMPANY.

"A human hive of industry" is a sentence that tersely and well defines the mammoth plant devoted to the manufacture of bee-keepers' supplies by this noted concern whose reputation extends throughout the universe. Right in the town, and adjoining the depot and tracks of the C. L. & W. R. R., are their immense two and three story factory buildings, covering an area of three to four acres of ground. The letter U would convey a pretty good idea of their arranged connection, the frontal or base of this letter to be 125 feet, and running depth 250 feet. Six engines are so arranged as to bring motive power to bear direct where it is needed. Combined there is 225 horse-power. Buildings are lighted by their own electric-light system, and equipped with their own first-class and adequate fire-protection system. The machinery for producing the multitudinous articles turned out is the best that can be constructed, and much of it is original. Any attempt to place on paper a conception of the workings here would result in failure, even were one to have columns instead of lines at his disposal. They do business with the whole world, and would with the planets if they could be reached. This useful industry was started just a quarter of a century ago by A. I. Root, a Buckeye production from Connecticut stock that distributed itself through this part of the State, and which has left an indelible impress. Every individual in the world that owns a swarm of bees, and every bee in the universe, knows The A. I. Root Company, Medina, Ohio. Their works are manned by a force of 100 skilled employees, who are busy every working day in the year, and often, in the press of season, work far into the night. Fully \$4,000 in wages are annually disbursed. They have their own printing-rooms, from which issue carloads of catalogs which go out all over the globe, and print 10,000 copies of their semi-monthly magazine, GLEANINGS, devoted entirely to bee culture. A. I. Root has advertised Medina to the world, to all nations and tribes; and they spend thousands of dollars in advertising in various periodicals devoted to kindred interests. There is no other similar factory in existence. It causes the admiring visitor to wonder. In itself it is a wonder. The amount of American inventive genius that one can see under The A. I. Root Company's roof is simply marvelous. The name, fame, and successes of this concern are almost beyond conception. It is remarkably and strangely coincidental that this plant in its entirety, its workings and management, should so much resemble that for which it is laboring—the bee-hive. Medina owes a debt of gratitude to this enterprising concern. It has been a tireless machine, throbbing its energies, and aiding materially at all times the general welfare of Medina.

DOCTORING WITHOUT MEDICINE.

LEAN MEAT AND NOT FAT MEAT.

After I had got to feeling real well, and was eating zwieback and the health foods pretty freely, I told Mrs. Root there was no further need that she should be so very particular in cutting out every little bit of fat so as to give me just the pure lean meat as she had been doing. She remonstrated, and declared I would get a setback if I went to eating greasy meat or greasy food. But I finally induced her to give me just one meal of nice fat juicy steak. As I had been dieting so long on pure lean meat I rather enjoyed the change. But a dinner of pork and beans, cabbage and squash, could hardly have upset my digestion more. I had one of my old sick-headaches, and kept awake a good part of the night with disturbance in the digestive apparatus; and I awoke with a headache next morning, and an entire loss of appetite. I think this is almost the only time when I have sat down to a meal, in the whole six months I have been dieting, without a good healthy relish for my meat. At breakfast I

felt as if I could not eat any thing at all. You may be sure, however, I had the pure lean sirloin steak, and not a bit of grease about it—not a bit of butter, not a crumb of zwieback, nor *any thing* except the lean meat. As soon, however, as I had chewed very thoroughly, and swallowed a few mouthfuls, my appetite began to return. The outraged stomach and bowels indicated their approval of the clean, easily digested food. The bad feelings gradually subsided, and in the course of 24 hours of strictly lean-meat fare, I came around to my normal state. Since then, whenever there has been any slight disturbance of the digestion, I have come back promptly to the clean meat, with *nothing else*; and there is no question about it in my case, that this treatment is sure and unvarying. But it took fully three months of a steady meat diet to get my whole system into natural working trim of the best sort.

Now, the question comes in right here, and it is the whole point of my little story this morning: Can headache, and other troubles that follow along the line of indigestion, sour stomach, distress of the bowels, etc., be cured in this way with *other* people as with myself? Will the beef diet, or this plan of "doctoring without medicine," give relief generally? I wish the readers of GLEANINGS would try it, and give me a postal-card report. The next time they have sick-headache, instead of trying the starvation plan (that is a sure thing with so many), just eat pure lean beef. This will give you strength to go about your work, and will be less violent than entire fasting. If your headache proceeds from a cold, my impression is that the lean meat will be a help even then; for my belief is that most colds are primarily caused by disordered digestion. An *ordinary* sick-headache ought to be cured entirely by a lean-meat diet for 24 hours, or say, whenever you feel a dislike for food of any kind. Instead of toast and tea, which is so often recommended, use just the lean meat. A little strong tea might in some cases be a benefit, for tea of itself will often cure some forms of headache caused by indigestion. In my case, however, whenever I have this sort of headache I seem to be overburdened with fluids in the stomach and bowels, and I get along better without a particle of drink of any kind at mealtime. Three hours after having eaten your dry meat, you may drink a cupful of hot water, just as hot as you can get it down by sipping it with a spoon. Even if you feel a repugnance to it, you will find, by the time you have taken half a pint, it has brought a feeling of relief. Please tell me briefly if it is not true, that I may be better able to guide those who are wishing me to guide them in this matter of health.

Just now I am discussing, mind you, the cure of sudden and acute diseases—something that can be cured, probably, within 24 hours or less. Now, when you find your system responds to this meat treatment, *then* you are ready to commence the cure of such stubborn and chronic diseases as rheumatism, asthma, and even consumption—diseases that will require absolutely pure lean meat for several weeks or months, or in bad cases it may be a couple of years, or the rest of your life; for it is surely better to live, and enjoy tolerable health on a restricted diet, than not to live at all, or to live a life of suffering and pain. With such a disease as diabetes, and others of kindred character, you may be obliged to hold to a strict diet all your life. One who changes suddenly from a mixed diet to one of pure lean meat will probably have trouble in the outset with constipation. With myself, however, at the present time I have no trouble of this kind at all, even on a strictly

lean-meat diet. Nature is ready to do her part shortly after rising in the morning, almost as promptly as the rising of the sun. At present I do not know of *any* other food that can take the place of the lean meat, for it contains neither starch nor sugar—the two substances that produce most of the fermentation, sourness, and gaseous disturbance in the bowels. All physicians, I believe, now agree, also, that lean meat is digested almost if not quite entirely in the stomach, thus relieving the bowels so that they may become entirely empty, and recover their normal state.

ZWIEBACK MADE OF WHOLE-WHEAT FLOUR.

Dr. Miller asks, in Straws, why this can not be made wholesale by the bakers. Doubtless it will be as soon as there is demand for it. The Battle Creek people do make it; but, to tell the truth, our people like the home-made rather better than that we buy at Battle Creek. May be the Battle Creek folks have not any whole-wheat flour equal to that made by W. B. McKenney, Abbeyville, Medina Co., O.

HOME-MADE ZWIEBACK, ETC.

Mr. A. I. Root:—We are glad to notice good progress with you in the lean-beef cure. In your notes on Battle Creek you did not tell us whether it was yeast bread of which zwieback is made. Thirty years ago I learned at Dr. Jackson's "Our Home on the Hillside," Danville, N. Y., how to make rusk, which in substance is identical with zwieback. It is made of whole-wheat flour and water, the dough thoroughly kneaded, then rolled out, cut into strips, or with a biscuit-cutter, and baked in a quick oven. It is broken in pieces, placed in a pan, and returned to a slow oven until all the moisture is dried out. It is then run through a hand-mill, and served with cream, or milk and cream. If zwieback is as good as this rusk, then surely it is mighty fine living, and it doesn't cost 10c a pound. Anybody can make it who will. Sixty pounds of wheat costs sixty cents. Made into zwieback it will cost the consumers \$6 00.

By the way, I must tell you of a discovery we made last summer. The mill from which we got graham flour shut down for repairs. When our graham gave out we tried a small lot made with our hand-mill. It did so well that we continued it. We wash and dry out the wheat before grinding; and for every purpose of whole-whole flour it is perfection—superior to that milled by the roller process. Now we don't go to mill for graham. Our mill is a Wilson.

Pure beef diet, without suitable and efficient means of chopping the meat fine, is like the play of Hamlet with Hamlet left out. I have used an Enterprise meat-grinder for five years, and know the excellent results from its use. In order to use all of the lean parts of a cut weighing 8 or 10 pounds, one has to stop and clean out the perforated plate several times. There is an implement called a steak-greith (sold for 50 cents by Alling & Lodge, Madison, Indiana) which fills the bill exactly. With this, one can utilize all the lean parts, chopping it as fine as the grinder, and in only a little more time.

JOHN CADWALLADER.

North Madison, Ind., Nov. 24.

Working Bee.—"A fellow came around here hunting for our nest the other day."

Queen Bee.—"What did you do?"

Working Bee.—"Those of us who happened to be around at the time gave him a few points."—*Truth.*



Peace on earth, good will toward men.

SOMETHING FROM GEORGE O. GOODHUE, DANVILLE, QUEBEC, CANADA.

Our older readers will, without any explanation, be glad to receive any thing that comes from the pen of George O. Goodhue. We might explain briefly to the newer ones that friend Goodhue paid a visit to your humble servant, A. I. Root, away back when the foundation stones were being laid for the first brick building at the Home of the Honey-bees. When everybody else—or at least *almost* everybody else—was afraid to loan money toward the enterprise, friend Goodhue supplied the needful funds, without even asking security. In fact, he refused to accept any thing except a simple piece of paper as a memorandum of the money he advanced. He had faith in the Home Papers and in the Home teachings; and even though he was not at that time a professor of religion he had faith in God, and it was my pleasure to tell him so. He has since come out before the world as a humble follower of the Lord Jesus Christ and as one of his ablest teachers; and it is because "peace on earth and good will toward men" seem to shine forth from every word he utters, and every line he writes, that I have seen fit to choose the little text for the title of my talk to you to day.

First I submit entire a private letter, written, as you will notice, on New Year's day. He says this letter was not *written* for publication; but I know he will forgive me for using it thus when I assure him I believe it will do good.

Dear Mr. Root:—I take the liberty of sending you a copy of the Montreal *Witness*, thinking it may be of interest to you at this time when so much has been said and done to jar upon the sensibilities of well-wishers of the race in both our countries. Perhaps one of the articles on the 13th page, entitled "The Crime of the Century," may have a little added interest to you as coming from my pen. I do not send it, nor this letter, for publication, but wish to say that our prayers join with yours that wisdom and kindness—in fact, true, genuine Christianity—may yet prevail in the councils of both nations.

My Christmas was made happier by a new photo of our dear Helen Keller and her estimable teacher, which reached me on that day; and the new year opens more brightly because of a kind, loving letter which came to me this morning from Helen. She is now passing her second winter in New York city, at the Wright-Humason school, where she has made astonishing progress. Besides arithmetic and physical geography, she is studying German, French, lip-reading, and voice training. When I think of her wonderful lip-reading, it seems almost an added proof that the age of miracles is not past. Just imagine the delight with which she told me in one of her letters last summer, that, by putting her fingers upon her little brother's and sister's lips she could understand what they were saying! Don't you think the dear fingers often get kissed when in such a tempting position?

I was at the Kindergarten for the Blind at Jamaica Plain, Boston, two years ago, and greatly enjoyed my visit there among the little blind children. Among them was little Tommy Stringer, whom you and many of your readers so kindly aided Helen in placing there. He is a very happy little fellow, and has much improved since his entry there, and the good work of improvement is still going on. Another dear child I saw was Lizzie Robin, who is deaf and blind, the same as both Helen and Tommy. Such a quick, active, and altogether charming little chatterbox! "I will show you how Tommy walked when he first came here," she said to me with a funny, roguish look on her bright, pretty face, and down she got in a trice upon all fours on the carpet, and commenced a

lively creeping *backward*, clear across the room. You couldn't have kept a straight face to save your life had you seen her and heard her merry laugh. Poor Tommy had early learned through sad experience that it was safer to "sail *stern foremost*;" and although past five years old when admitted to the kindergarten, that was the "way he walked," as Lizzie said. When I saw him a little later that afternoon come walking erect as a soldier into the schoolroom, get his kindergarten exercise, and immediately commence work, I felt renewed thankfulness to all the dear friends who had made it possible for this soul to be rescued from its worse than Egyptian darkness, and be brought into the marvelous light of intelligence and education, with all its blessed possibilities. I inclose you pictures of Lizzie and Tommy as they appeared when I saw them.

I am afraid I am forgetting what a busy man you are, by spinning out this long letter.

GEO. O. GOODHUE.

Danville, P. Q., Canada, Jan. 1.

• Of course the readers of GLEANINGS will be interested in what friend Goodhue tells us about Helen Keller and her deaf and dumb and blind comrades. Yes, it is indeed wonderful; it is one of the encouraging wonders of the present age, to realize that one whose misfortunes it would seem almost place them beyond the possibility of education should, by intelligence, diligence, and painstaking care, become intellectual wonders. Everybody has said, you know, that Hellen Keller was endowed by nature with something more than often falls to the lot of humanity: but now it transpires that Tommie Stringer and Willie Robin too promise to come something near Helen herself; and then it is that we begin to understand the great lesson that God himself is teaching us through these little unfortunates—that almost any child may be good and great by proper teachings and environments. But now for that other question—war between two great peoples.

After reading the *article* (from the *Witness*) alluded to, it meets my approval so well, and seems to be so exactly what GLEANINGS ought to say at a time like this, that I have decided to give it *also* entire:

THE CRIME OF THE CENTURY.

Some of the most deplorable of the many far-reaching consequences of the President's ill-advised message have as yet been scarcely felt, but are none the less sure to come unless the Christian people of both nations speedily unite like true brothers in frowning down this wicked effort to set them at variance.

There will be no war between the two great Christian nations of the world. I say it reverently, but fully convinced of its truth—God will not permit the light of the world, the Bible, to which both nations owe all their wonderful greatness—to go into such obscurity as such an unholy conflict would entail.

Disastrous as has already been and still may be for a time the financial loss resulting from this message, it pales into utter insignificance beside the far greater loss resulting to the American nation through having so willfully sinned against its mother country, and throwing away for an empty bauble the priceless trust of all of England's real intelligence and conscience. No one in England pretends to justify her action toward her colonial daughter in 1776; and while her sympathetic response to the periodical outbursts of Fourth of July "yelloquence" has been a silent one, and perhaps almost unconscious to herself, still it has been none the less real, and America has continually benefited through it in a thousand ways. This kindly feeling has deepened and strengthened as the years have sped on their course, entirely healing, in so far as England was concerned, the breach caused by the events of 1776; and up to the time of the issuance of this message England looked with affectionate pride upon the great nation speaking its language and ruled by those whose blood came from her veins. To what extent suspicion and distrust will now take the place of esteem and priceless trust time alone can determine.

To illustrate more fully, by contrast, some of the far-reaching consequences to which I at first referred, let us suppose for a moment that America had joined the assembly of nations at the Bosphorus, and had said to them, "We are here as England's ally and friend to compel this slaughter of Armenian Christians to cease, and are fully alive to the full responsibility incurred, and keenly realize all the consequences that may follow." That such action would have resulted in war I do not believe; nay, rather the peace of the whole world would never have been in so sound a position as for these two Christian nations to have thus joined hands in refusing to longer endure "a supine submission to wrong and injustice" to the Armenian Christians.

Would any one attempt to calculate the immeasurable impetus which such an alliance would have given to all that makes for the best welfare of the whole human race? Remember that the whole conscience of Germany, France, and Russia, and of the other nations, would have been overwhelmingly in their favor, and that conscience would have paralyzed any threatening arm sought to be raised against them. "When a man's ways please the Lord he maketh even his enemies to be at peace with him." Would he do less for a nation?

How long well-wishers of the race have vainly scanned the oft-troubled horizon of the Old World, hoping to see indications of a settled peace which would lead to a general disarmament—what an aid to this movement such a union under these circumstances would have been! What an impulse such an alliance would soon have given, not only to the success of foreign missions, but also to the important work of Christianizing our careless heathen at home in both countries. "See how these Christians love one another!" would have been an open sesame to countless millions of the gold and silver which ought now to be in the Lord's service, as well as to the hearts of millions who should enroll under his banner for active service.

Humanly speaking, this all appears to have been lost; yet is it? And must we in pursuance of our illustration attempt to measure the contrary effect—the untold loss arising out of this lamentable action, and accruing to all beneficent objects, including the failure to rescue our Armenian brethren whose blood still cries from the ground against America as well as against England?

Were we to attempt to do so, without putting our whole trust in God, whose kingdom shall surely prevail in his own good time over all the earth, we might well grow sick at heart in utter despair. But the omnipotent Jehovah lives and reigns, and ever "moves to his great purposes unhindered by aught that seeks to thwart his will." In this shall be our trust.

When I attempt to decide what should be done between great nations like Great Britain and the United States I feel so overpowered by the fact that I am so ignorant, comparatively, especially in the great political and financial matters, that I hesitate to say any thing; and yet I am sure friend Goodhue is right; and I am sure, too, that the text at the head of this talk is safe for *nations* as well as individuals, as friend G. expresses it.

The pleasure of my trip up Lookout Mountain was greatly marred by the constant reminders of the bloody conflict between America's own boys in that "battle above the clouds," as it has been termed. I was talking with utter strangers; but whenever reference was made to it I could not help giving utterance to the thought, "Oh! why did our people get into such a state of affairs as to imagine that such bloodshed was needed, or that it could ever be possible *God should be pleased to see neighbors murdering each other?*"

In one sense, perhaps, it was necessary that there should be bloodshed. Let me give you an illustration which I have several times alluded to:

When I was a boy in my teens there was a rebellion in my school. I restored order and tranquillity by—may God for give me, but, to tell the truth, there was at least a *little* shedding of blood; and that, too, the blood of one of my *own pupils*. As the matter stood just at

that time, *perhaps* there was no other way. I shall not now undertake to decide; but had I been at that time, say during that whole winter's term of school, seeking guidance and direction from *my Bible* and from *Christ Jesus*, there never would have been any need of such a crisis. It was not my fault just *that day* that one of my pupils told me face to face that I was not man enough to make him behave himself; but it *was* my fault during the weeks and months—yes, from the very *first week* of that school till the last. I was doing that which I knew no one who holds the sacred office of teacher had any right to do. Many may say it was a *little* thing; but downright *sin* is never a little thing. I *knew* I was sinning. If my good old mother had at that time looked into my heart, I should have been *ashamed* of the thoughts that were lurking there. May God forgive me! Well, now, it does not always need a *mother's* eye to read a man or to read a teacher. My pupils lost their respect for me when I might have gained and *held* their respect and esteem. Now for the lesson:

If there is any cause of war between the United States and Great Britain, then both England and the United States should be ashamed of it; and it is not too late to mend matters even now, without war or a *thought* of war. This standing by our flag, and this Fourth of July spirit of patriotism, is all right providing the patriots are *Christians* first and patriots afterward; or, in other words, if both England and the United States are seeking first "the kingdom of God and his righteousness," most surely should there be no faint thought of even *trying* to see who is greatest, or discussing the matter in regard to war. In our bee-keepers' conventions, when we meet on such exceedingly friendly terms and friendly ground, the very thought of such a thing is painful. Why! instead of lifting a finger against these friends, I would turn around and fight for them. They might be mistaken, but they could *not* be vicious and selfish.

A few days ago we were talking about a quarrel over a division fence, where pistols were used. I said, "In such a case it is far better to get shot than to shoot somebody else." If a burglar gets into one's house in the night, of course this would alter the case entirely. I am talking about quarrels between *neighbors*—neighbors whose farms are separated by only a line fence. And is it not true, dear friends, that *England* and *America* are separated by only a line fence? Should there be a quarrel, it would be a quarrel between neighbors. During my recent visits in the South in Florida and at Atlanta I have had exactly the same feeling. These people are not only our neighbors, but exceedingly kind, unselfish, and self-sacrificing neighbors. Should I stupidly forget at some future time the pleasant relations that have existed between us, it would give me exceeding pain. Let me illustrate:

While stopping at one of the homes in Florida, when I arose in the morning some forty or fifty dollars were gone from my pocket. Just as soon as made the discovery I decided in my own mind that I should *never mention it*; if gone, it was by my own stupidity, or some tramp thief had been in my room while I slept and I would not give pain to the good friends who were entertaining me, even if it cost me *many* times the sum in question. After I had fully decided what to do, however, I found my wad of money kicking around under my feet.

Now, there has been a growing feeling of friendship, of peace and good will, not only between the North and South, but between England and America. This feeling has at least

been growing among a great *part* of our people, that, if there is any shooting to be done, we should prefer to be *shot* rather than that a weapon should be even pointed toward these good friends of ours. If money is lost, I am sure I am right when I say there is a feeling that we would sooner lose a *good round sum* rather than wound the feelings and sensibilities of those whom we know are so much above taking that which does not belong to them that it is utterly impossible for any trace of *selfishness* and *greed* to lurk in their hearts. We know this is true of *individuals*. Now, I do not know about nations; but I *do* know, I think, as friend Goodhue says, that what is true of people is true of nations.

ARTIFICIAL HONEY.

SELLING RECIPES.

It is some time since recipes for making honey have been advertised; and, in fact, this whole principle of selling recipes for a certain sum of money—25 cts. or \$25.00 as the case may be—has been so nearly played out we have given but little place to the matter. Here is one, however, sent by one of our contributors. It seems to be right in our line, so I think I will give the advertisement in full.

THE WAY TO MAKE MONEY IS TO MAKE HONEY!

We always have honey at our house, eat it three times a day. Make it ourselves. As good or better than bees' honey; good tasting and perfectly wholesome. Co. ts only one-third as much. Honey sells readily everywhere at from 15 to 20 cents per pound. You can make it in almost any quantity in FIVE MINUTES at a cost of only 6 or 7 cts. per pound. Ingredients to be obtained at grocery stores. This recipe is worth to any family \$50 every year.

IT'S A MONEY-SAVER.

I sell the recipe with full directions neatly printed for only 50 cents in 1 or 2 cent stamps or cash.

AGENTS

can sell this recipe to nearly every family, as almost everybody likes good honey; and by showing them the honey you can make with this recipe they will buy at once. I allow agents half the money they sell recipes for. It will pay you five thousand dollars per year for the next few years, if you hustle.

Say, my dear friend, if you fail to see money in this, I am sorry. I tell you candidly and perfectly honestly that I am offering you

A MIGHTY GOOD THING. PUSH IT ALONG.

I have not secured an agent in your county, or you would not have received this circular. First come, first served. Act quickly, or you may be too late.

If you will send me 25 cents within 10 days, and will also distribute a few circulars among your friends for me, I will send you full instructions how to make the honey; and if every thing is not absolutely just as I herein represent I will gladly return your money.

Send 25 cents for the RECIPE, and a test will PROVE that I am indeed your friend. If you want to make money easily, honestly, rapidly, address at once

H. M. DANIELS, AKRON, OHIO.

Well, the above is quite taking, now, isn't it? We sent the 25 cts., and, instead of distributing circulars, as per request, we reprint the whole thing here in GLEANINGS. That is right, is it not? for our readers are all our "personal friends;" and while we are in a friendly mood I think we might as well give you the recipe right out. It will save time and postage and money. My impression is, that the same thing is found in Dr. Chase's recipe-book, and perhaps in many other recipe-books as well. Here is your splendid honey, made in five minutes, at a cost of only 6 or 7 cts. per lb.

SPLENDID HONEY.

To make 35 pounds: Soft water two quarts; white or brown sugar, 20 pounds; pure bees' honey, three

pounds; cream tartar, 80 grains; essence of roses, 24 drops. Mix the above in a common kettle, let boil five minutes, take it off, add the white of two well beaten eggs, and when almost cold add two pounds of bees' honey. If made for family use, only a small quantity may be made at a time. Keep in cool place.

This honey is equal in every respect to that made by bees and costs only one-third.

Honey suitable for every-day use is made as follows: Good common sugar, 5 pounds; water, one quart; gradually bring it to a boil, skimming well; when cool, add one pound bees' honey and four drops of peppermint essence. If you desire a better article, use white sugar and one half pint less water, and one-half pound more honey. If you wish to give it the rosy appearance of bees' honey, put into the water one-fourth ounce of alum.



STARTING GRAND RAPIDS LETTUCE.

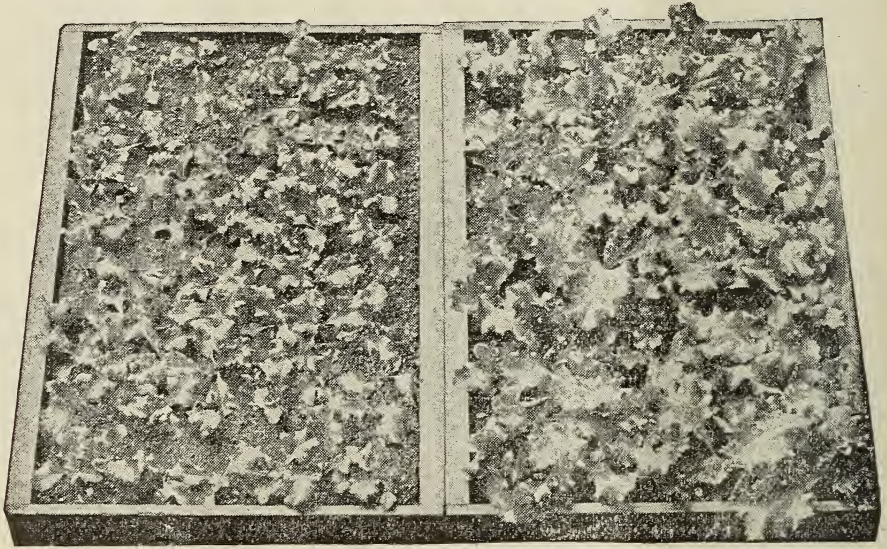
Now is the season for sowing the seed and transplanting the plants. If you have a greenhouse or hot-bed, and are interested in gardening, I would say, sow some seeds, at least in the house. Get some trays or shallow boxes by cutting common grocery boxes in two in the middle, or nail them up, as you choose. If you

have, say, half a dozen seeds on every square inch of surface. Sift a little more fine dirt over them so as to cover the fine seeds. And now if you can get it I would put on some fresh horse manure from the stables, without any straw or bedding. Pound it up fine with a strip of board or piece of lath. Sift this fine top dressing all over your boxes. One seed-box will be all you will need, and you will probably have seedling plants to sell to your neighbors besides. Sprinkle the surface with water; set the box in the window, and keep them at a temperature of from 40 to 70 degrees. Lettuce is very hardy; and even if the ground should be frozen a little over night it will not hurt the plants. When they get the second and third leaves on, then you are ready to transplant. I would have a spacing-board like the one shown below. Prick



SPACING-BOARD.

out the plants and put them in boxes like the first, so as to be 2 inches apart from center to center. When the plants get to crowding again, then they must either go outdoors in a hot-bed, or be set still farther apart in a box with soil a little deeper. Below is a picture of some boxes of lettuce ready to go out into the larger bed.



SURFACE WATERING AND SUB-IRRIGATION WATERING IN CONTRAST.

expect to work with hot-beds and greenhouses, you had better make them of a size so that a certain number will go under the regular sash; 3 ft. x 16 in. is a very good size. Two inches of dirt is enough to start small plants, and we have got along very well with only an inch and a half. The latter makes them lighter to handle. Get some fine old well-rotted black manure, some sand, and some good garden soil. Some swamp muck is very nice if you can get it. Mix all together by passing through a sieve, and fill your boxes. Pat it down with the board so as to be level and smooth; then sprinkle the seeds over the surface of the soil so you will

The way we sub-irrigate boxes of plants like the above, is to simply set them in a larger box having, say, an inch or less of water in the bottom. The bottoms of the plant-boxes, of course, are to be made of narrow strips of wood with cracks large enough to let in the water. The watering is done by setting box and all right down into the shallow box of water till the water has soaked up through to the surface. Never water the foliage at all. The above cut is from Lettuce Bulletin No. 61, mentioned in our last issue, and shows the advantage of sub-irrigation over the ordinary way of sprinkling or pouring the water on top of the plants.

ALFALFA—ALL ABOUT IT.

During my visit at the Atlanta exposition I ran across a department where all of the government bulletins pertaining to agricultural matters were nicely displayed, and I had quite a little talk with the official in charge. He informed me that there had been more call for a government bulletin in regard to bee-keeping and honey-producing than on almost any other one subject, and as yet nothing has been provided. Ernest told you in our last issue, however, something in regard to the good work our friend Frank Benton has been doing. Doubtless this will soon be in the hands of all of you. I spoke particularly with him in regard to Farmers' Bulletin No. 31, in regard to alfalfa. This is the most complete, comprehensive, and practical thing on the subject I have ever got hold of. It is especially valuable to any one who has contemplated trying alfalfa on his own grounds; and I was greatly pleased to note that alfalfa can be grown on a great variety of soils, and in various kinds of climate, if you are only careful to keep it free from standing water. Alfalfa can not stand "wet feet." Have your land thoroughly underdrained or thoroughly subsoiled, or, better still, both, and you can make alfalfa grow almost anywhere; and if it is well



A YOUNG ALFALFA-PLANT.

protected from water it will survive very severe if not the most severe frosts and winter weather. After it once gets thoroughly rooted it will, if I am correct, stand more drouth than almost any other plant known, unless, indeed, it is its near relative, sweet clover.

I was especially pleased with the correct engravings made of the plant; and the Department of Agriculture has kindly loaned me these drawings. Compare them with some pictures of alfalfa shown in our seed-catalogs, and you will note the difference. We do not take the space here to make extracts from the bulletin, from the fact that it will be mailed free of charge to any citizen of the United States who cares for it. Simply address a postal card, asking for Farmers' Bulletin No. 31, on alfalfa culture, and you will get it. Here is what one of the government officers has written to me:

Mr. Root:—If you will furnish the names and addresses of persons to whom you would like to send a copy of the alfalfa bulletin they will be mailed from this Department. It is very gratifying to learn that this publication is appreciated by the members of your firm, who are, of course, fully competent to pass judgment upon it.

Respectfully,
GEO. WM. HILL,
Chief Div. of Publications.

U. S. Department of Agriculture,
Division of Publications,
Washington, D. C., Nov. 14.



ALFALFA-PLANT SEVERAL YEARS OLD, AFTER HAVING BEEN CUT OFF REPEATEDLY.

GARDENING DURING THE LATTER PART OF JANUARY.

Of course, all our gardening in our northern States in the middle of the winter will have to be done under glass, and mostly in a greenhouse. Hot-beds can be prepared and worked in during occasional pleasant days. But with a greenhouse, even a little cheap one, you can put in the time very profitably, and I think very pleasantly, unless, indeed, the business is overdone in your locality; but that is not often the case, especially if you are near some town or large grocery—the larger the town, the better.

We have spoken on another page about growing lettuce; but if you have room, a great variety of seeds may be planted. Asparagus-roots may be placed under the benches. Bush beans have always paid us well for the space they occupy. Beets may be sown quite thickly, and transplanted when they have the second or third leaf. We have always found early beets, started under glass, profitable; that is, there is always somebody who will want them. If you have no cabbages in cold-frames to winter over, now is the time to sow your Jersey Wakefield cabbage seeds. Make the ground rich with old hen manure pounded up fine and sifted in, and then sift slacked lime over the bed and rake it in. This will ward off clubfoot, and give your young plants a tremendous boom to start with. When they start out strong and rank they make big plants, and head up quickly to good size. My experience is that you can not give cabbage too much manure. A few forcing carrots may be profitable. Start cauliflower the same as cabbage; and whatever you do, start some White Plume celery. Don't put in very much so early, for there is danger of its running up to seed unless it is watered well and kept growing just right. Start corn salad if your customers like it, and don't forget watercress. This is about the easiest plant to grow under glass, if you give it water enough, of any that I have ever worked with.

You can try a few cucumbers if you like; but you have got to have a warm house, and you will have to learn the trade before you make a success of it. The same with melons. Onions are easy to grow; and if your house is poorly heated, and every thing freezes up, it will not hurt the onions. Onion-sets of all kinds grow nicely with any sort of protection; but the American Pearl brings the biggest price. Of course, you want some parsley to mix in to set off other things, and for flavoring.

American Wonder peas are as hardy as the onions. You can grow them when you can not grow any thing else. Just for the fun of it you might put in a few of the new flowering peas, Burpee's Cupid. They can be grown in pots, and will often blossom when up only four or five inches high. Peppers are so sensitive to cold that you had better not start them until a little later unless you have excellent protection from the cold.

Get in your Thoroughbred potatoes which you got as a premium, if they are not already planted and up. If you can get some big old roots of rhubarb (take them up with a good big lot of dirt adhering) you can have some delicious pies from new fruit along in February. Put them under the benches with the asparagus; but you can raise it profitably in almost any cellar, without having any greenhouse at all. Just plant the roots in the warmest place you have. Give them water, and it will not make much difference whether you give them any light or not. They will shoot out great long brittle stems of a beautiful reddish pink,

as handsome as a peach, and almost as delicious when properly cooked.

Radishes are the easiest thing in the world to raise, and freezing up does not hurt them much. Wood's Early Frame and Scarlet Globe are the kind you want to grow in the winter. If you have customers who will pay you a cent apiece for all you can raise in February, you can get rich selling radishes. Spinach is also exceedingly hardy. It will oftentimes bring as much per pound as lettuce. Last, but not least, start some tomato-plants. You want a few nice ones to show to visitors. If anybody wants to give you a nickel for the plant, pot and all, let them go. We get that price for a good many extra nice large plants just by putting them out in sight where the people see them as they drive by, say during a nice warm day in April or May. You see, if the plant is already rooted in the pot you can set it outdoors pleasant days, and carry it in nights; and one extra large early tomato-plant will give a family quite a taste of tomatoes a week or ten days before anybody else has any.

Now, all these things I have mentioned can be started profitably in the month of January—that is, start just a few of each. If you haven't a greenhouse, have some boxes in the window. If you cannot afford to keep a fire all night, carry them down cellar when it is very cold. With a little pains you can fix up a small window in the cellar so as to let them have the sun in the middle of the day, and still be secure from frost. Have the window fronting the south, and have a door to shut over it during very cold nights. You can fix a door something like the hatchway of a cellar; or if the hatchway of your cellar fronts the south, just have a sash made to fit in the hatchway right under the regular wooden door. When it is very cold, let down the wooden door over the glass sash; but whenever the weather permits, swing this wooden door open to give your plants light. Such a hatchway, with some sort of little second-hand stove, back a little inside of the cellar, will make quite a pretty little greenhouse for one of the girls or boys to play with. I have not said any thing about flowers; but you see if the women-folks do not "catch on" and get some enjoyment *also* out of your "winter gardening."

Special Notices in the Line of Gardening, Etc.

By A. I. Root.

CELERY UNDER GLASS.

We are getting beautiful celery in our greenhouses, on the plan given on page 642, Aug. 15, 1895, bleaching by simply wrapping brown paper around the stalks, said paper being held in place by very light rubber bands. The bands stretch as fast as the celery grows. It sells readily at 15 cts. per lb.

BEST OF ALL BEANS.

After traveling extensively through Florida, and conversing with bean-growers, I find these are, as a rule, given the preference for green beans for shipping to the Northern markets. We offer for sale seed of our own raising, true to name, and sure to germinate, at the following low prices: Eighteen cents per pint, 30 cts per quart, by mail, postpaid; by freight or express, \$1 per peck; \$3.50 per bushel; 5 bushels, \$15; 10 bushels, \$25.

BURPEE'S EXTRA EARLY POTATO, ETC.

In our last issue we gave the price of this potato at 75 cts. per bushel. As nobody has at this date, Jan. 9, taken up with our offer we hereby advance the price to \$1.00 per bushel, the same as the Sir William. We notice Burpee's price, by his new catalog, is \$2.00, and we have not seen any quotation any lower. By the way, Carman No. 1 is also listed